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THE

PHILADELPHIA

MEDICAL MUSEUM.

CONDUCTED

BY

JOHN REDMAN COXE, M. D.

VOL. V.

Philadelphia :

PRINTED BY T. & G. PALMER,

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.....
1808.

DISTRICT OF PENNSYLVANIA, TO WIT :

Be it remembered, that on the nineteenth day of December, in the thirty-third year of the independence of the United States of America, A. D. 1808, (L. S.) Thomas Dobson, of the said district, hath deposited in this office the title of a book, the right whereof he claims as proprietor, in the words following, to wit :

“ The Philadelphia Medical Museum. Conducted by John Redman Coxe, M. D. Vol. V.”

In conformity to the act of the congress of the United States, intituled, “ An act for the encouragement of learning, by securing the copies of maps, charts, and books to the authors and proprietors of such copies, during the times therein mentioned;” and also to the act intituled “ An act supplementary to an act, intituled, ‘ An act for the encouragement of learning, by securing the copies of maps, charts, and books to the authors and proprietors of such copies, during the times therein mentioned,’ and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints.”

D. CALDWELL,
Clerk of the District of Pennsylvania.

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MEDICAL MUSEUM.

VOL. V.....NO. I.

On Snake Stones and other Remedies for the Cure of Diseases produced by the Bites of Snakes and mad Dogs. By JAMES MEASE, M. D.

I SHOULD have permitted the miraculous account of the snake stone, as given by William H. Harding in your last volume, p. 240, to have died the silent death which it justly merited, did I not feel concerned lest the character of our country should suffer in the opinion of reasonable men in other parts of the world, if it were permitted to pass unnoticed. An entire silence upon the subject would apparently authorize the belief, that whatever opinion might be entertained respecting the snake stone and its virtues, no fact or argument could be adduced against it; one protest, therefore, at least, shall be offered upon the occasion.

I ought to premise, before proceeding further, that the stone celebrated by Mr. Harding is not the only stone in Virginia, or in the world, supposed to possess the virtues of extracting the poison from venomous animals. In the autumn of 1805, a Mr. Micow, of Virginia, announced to the public his being

possessed of such a stone, and proposed to the inhabitants of four or five adjacent counties, to sell it for the moderate sum of 2000 dollars, in shares of 10 dollars each. Lately, at Washington city, another stone of a similar nature has been announced in the papers. At or near Bustleton, in Philadelphia county, a man possesses one of these snake stones, which has obtained as much celebrity in the vicinity of the owner as those in Virginia. Mr. Harding himself mentions one being in the possession of Joseph Fredd, of Loudon county, Virginia. Lastly, in India such stones are very common, and the credulous natives believe as firmly in their preservative powers against the effects of the bites of venomous snakes, as the Chinese do in the universally salutary operation of the famous ginseng root. The author of the "*Wonders of Nature and Art*" thus notices these stones, in the account of Tonquin. "Persons who happen to be bitten by serpents press out the blood, and apply a small stone called the *serpent stone*, which is said to possess the miraculous power of drawing out the poison. When impregnated with the venom, it drops off like a leech. It is then carefully washed with milk and water, in which lime has been diluted; and, on a second application to the wound, it exhales all the virus so completely, that, in less than an hour, the patient becomes perfectly free from pain."—Vol. VI, p. 271, Philadelphia edition.

Two of these stones are in the cabinet of the Philosophical Society, and another one is in my possession, all of which were brought last year by a gentleman from India. They are rather more than an inch long, and about five-sixteenths of an inch broad, of a bluish or slaty colour, and flattish shape.

When I first read the proposal of Mr. Micow in the Richmond Inquirer, for the sale of the specific, I was at a remote

corner of the union, viz., St. Simon's Island, Georgia; and as I was well persuaded of the imposition attempted to be practised upon the people, I wrote an address to them without delay, and gave my reasons why I did not believe that the smallest particle of medical virtue resided in the stone; accounting, at the same time, for the supposed preventions of the disease by it; for it must be remarked, that no curative power was allowed to the stone after the disease has actually come on. The piece was sent to Savannah, for insertion in a newspaper, and a copy directed to be forwarded to the editor of the *Richmond Inquirer*; but it was mislaid by the printer for some months, so that my endeavours to serve the people of the counties called upon to buy the stone were rendered fruitless. Indeed, I might have saved myself the anxiety upon the occasion; for, from what I have since learnt, the people of Naples do not more firmly believe in the miraculous liquefaction of the blood of St. Januarius, than do many of the good people of Virginia, with respect to the infallibility of the snake stone. It will scarcely be credited at a future day, when numerous failures of the now famous remedy shall have taken place, that the proposed number of shares was filled up in a few weeks; and that, after a meeting of the subscribers for the purpose, the stone was deposited in the hands of Dr. Brockenbrough, of Tappahannock, as a central spot, whence it might be most readily obtained, when desired by any of them. Mr. Micow no doubt feels very snug at the receipt of 2000 dollars; and the worthy stockholders are quite secure from even the apprehension of danger from all the attacks of rattle-snakes or mad dogs in their counties!!

My address, when found, was sent to Richmond, to my friend Dr. Trent, who inserted it in the *Inquirer*. In addition to what I have now to say, I may repeat, with propriety, what I then

stated, and I earnestly beg the serious attention of all concerned to my remarks, viz., that the deception with respect to the supposed efficacy of these stones, and of all other preventive remedies, arises from the following causes: 1, from the snake giving the bite not being venomous: 2, from the dog not being mad: 3, from the wound, whether from snake or dog, being made through clothes or leather: 4, from the known and established fact, that not one in twenty persons who are bitten by dogs *actually mad*, are ever attacked by the disease.

1. All snakes which bite are not venomous: the number of the latter kind in this country are very few compared with the great varieties which are to be found. Even the dreaded rattle-snake often bites without injury following. Hence the first source of fallacy in attributing preventive powers to the stone, or any other external or internal remedy.

2. The dog inflicting the bite may not be mad. These faithful animals are subject to a variety of diseases, inducing a fretfulness or irritability of temper, which may cause them to bite upon a slight provocation. A dog, moreover, may have lost his master, when on a journey; and in passing through a town, while he is heated by exercise, lolls his tongue, froths at the mouth, and pants. The alarm is given, a rabble collects, pursues, and attacks the animal, who, using the only weapons of defence in his power, viz., his teeth, assails his enemies: a bite given by a dog under such circumstances would be supposed highly dangerous, and a remedy applied would obtain the credit of prevention, though not in the least entitled thereto.

I have no hesitation in saying that the dog which bit Mr. Harding's child was *not* mad. The only symptoms of mad-

ness which he discovered was his "*biting at every thing within his reach, both before and after being tied.*" Mr. H., "certain that the dog was mad, directed him to be killed." This act completely puts it out of our power to ascertain whether his opinion was correct or false: for dogs will often bite at every thing, though not mad. When, at an early period, I turned my attention to this subject, I dwelt on the propriety of *confining* instead of killing all dogs from which bites might be received, in order that the certainty of the animal's madness might be ascertained, and much uneasiness to the sufferer thereby probably prevented. This advice cannot be too often repeated. In the present case, the fact can never be known.—From these remarks we may learn the fallacy in attributing preventive powers to the snake stone, or to any other external or internal remedy. From Mr. Harding's account, however, of the snake stone, to which he attributes the preservation of his child, it appears, that the owner had cured the disease in some "who had the paroxysms of hydrophobia on them at the time of the application." I will not insinuate that there was any disposition to exaggerate the powers of the stone, but I will say, that the owner was mistaken as to the disease. Our books of medicine are full of imaginary cures of the complaint, by various and opposite remedies, the latest of which is that related by Dr. Burton in the *Medical Repository**, hexade 2, vol. 2. If, then, medical men may be so easily led into an error, is it any wonder that others who have no knowledge of the general symptoms will readily fall into an error on the subject? But can any medical man reconcile himself to the theory, that a little stone, by being merely applied to the bitten part, can have the power to draw all the venom from the general system to one spot, and then draw it out?

* See my remarks upon this case in the *Medical Museum*, vol. 3.

3. The part of the body bitten materially affects the chance of infection, and, of course, the credit of the remedy. Much fallacy has arisen from inattention to this circumstance. A person may be bitten on the hand or face, and do nothing for the wound: he is seized with the disease, and of course dies; for, alas! *no cure has ever yet been effected*: another is bitten, perhaps by the same dog, through a coat, stocking, boot, or shoe, by which the dog's poisonous saliva, or snake's venom, is wiped off, and the clean tooth enters the flesh. The snake stone or other remedy is applied, and no complaint follows: in such case, the efficacy of the nostrum would be apparently certain, whereas the error of ascribing preservation thereto must be obvious.

4. Numerous writers of the most established credit have recorded, that not one of a great many persons bitten by dogs actually mad, ever take the disease which sometimes arises from a bite. The "celebrated" Cocchi*, as Van Swieten calls him, relates, that, among several persons bitten at the same time, some died, notwithstanding the most noted methods of cure had been used; and that others again remained perfectly well, although they underwent no manner of treatment. Dr. Vaughan† informs us, that "of between twenty and thirty persons, who were bitten by the dog which gave the fatal wound to the boy," whose case he relates, "not one felt the least ill effects except himself." "I know," says Mr. John Hunter, "where there were twenty-one people bitten by one dog; nothing was done for any of them, and only one was taken ill: if they had taken medicine, then it would have been

* Bagni di Pisa, p. 318. Van Swieten's Comment. Aphor. 1137.

† Cases and Observations on Hydrophobia.

said, that they only lost one out of twenty-one*. Dr. Houlston† says, that, out of nine persons bitten by one dog, only one was taken ill.

5. Lastly, some persons have a fortunate inaptitude to take the disease. “I once knew a footman,” says Dr. James‡, “who was three times bitten by dogs manifestly mad, insomuch that several animals bitten by the same dogs, near the same hour, contracted the distemper, and died. This fellow could not be persuaded to do the least thing by way of precaution, and yet never had the least tendency to hydrophobia.”

Some of the above facts were formerly published by me||, upon the disease in question; but as the pamphlets which contain them are not now to be purchased, and it is of great consequence to undeceive the public with respect to an error of so much importance as trusting to an inert remedy to prevent an awful disease, I thought it better to state them at length than barely to refer to books, which cannot be supposed to be within the reach of those for whom this paper is principally intended. I think they ought to satisfy every one of the absurdity in attaching the least credit to the snake stone, or to any other preventive internal remedy or external application. The only rational means of prevention, and which should never be neglected, are, enlarging the wound, if necessary, pouring water, either warm or cold, upon the wound from the mouth of a tea-

* Letter to Dr. Hamilton. Remarks on Hydrophobia, p. 213. London: 1798.

† London Medical Journal, vol. vi.

‡ Treatise on Canine Madness, p. 40. London: 1760.

|| Inaugural Dissertation. Philadelphia: 1792. Observations on the Arguments of Professor Rush, in favour of the inflammatory nature of the disease produced by the bite of a mad dog. Philadelphia: 1801.

kettle, and keeping the part open for several months. The inutility of all internal remedies will be obvious when it is known, that the disease has been known to attack in all the intermediate periods between a few days and four years*.

The world has long been gulled by numerous specifics for the prevention of the dreadful disease arising from the bite of a mad dog; but they have all, in the end, lost credit, owing to their repeatedly failing, and to the publication of such cases in the medical journals. In this country, I know of only four specifics which have acquired credit for the same purpose, viz., one by Kettering, of Dauphin county, in this state; the snake stone of Virginia; Machant's pills; and the remedy of Mr. Crous, of New York. Mr. Kettering had been famous for upwards of thirty years, for the cure of the disease, and was consulted by all ranks in several of the states†. In consequence of the secret having been stolen from him, he determined to make it public, and applied to the legislature of this state, in their session of 1800—1, and stated that he originally brought the remedy from Germany, but found it afterwards in this country; as usual, he added that he had never failed in a single instance for upwards of thirty years, and offered, at the same time, to disclose the remedy to the public, trusting to the liberality of the legislature for suitable remuneration. A committee was appointed to confer with him; the plant was shown, and, upon consulting that excellent botanist, Dr. Muhlenberg, of Lancaster, it was found to be a common plant of our country, viz., the *anagallis arvensis*, or common pimpernel, or chick-

* Medical Repository.

† A gentleman informed me, that, several years since, he met a negro man, servant to general Washington, at Hagerstown, in Maryland, who had been to Kettering on account of a bite from a supposed mad dog.

weed. As the proof of its preservative powers rested upon the mere authority of the applicant, the committee did not think proper to recommend any reward for him, but contented themselves with making honourable mention of his patriotic conduct.

Of all the famed specifics which have at various times been offered to the world, none have received so much attention and such distinguished honours as the *anagallis*. Professor Murray, in his *Apparatus Medicaminum*, has given a long account of it, and of the various authorities upon which its character was supported. From that writer it appears, such was the opinion of its efficacy, that laws were even passed by several governments in Europe to preserve the plant from destruction. Murray, however, doubts its virtues, and enumerates several instances recorded of its failure. Its inefficacy was also shown in the case of the child of a citizen of Philadelphia, and in that of a Mr. Huber, of Lancaster, the next summer after the discovery of the plant to the legislature. Dr. Muhlenberg also informed me of another instance in which it failed.

2. The snake stone is already disposed of; I shall therefore proceed to state,

3. That a composition, known by the name of *Machant's pills*, has also acquired some celebrity as an infallible preservative in Virginia; but their total inefficacy has lately been humanely shown by a statement of Mr. Marshall, of Winchester, in a melancholy case in which they had a fair trial. No doubt many more have occurred, but they have either been designedly concealed, or no public mention has been made of the event by those under whose cognizance they happened. But,

4. Here comes the climax ! It would seem that Mr. Crous, of New York, has been long famous for the prevention and cure of the disease under consideration, and that the legislature of the state purchased the secret from him, whether upon his petition or their request, I know not : the following is the statement upon the subject, taken from the public prints, and I think will astonish the world :

“ NEW YORK, April 2, 1806.

“ We have been informed that a mad dog was killed in the precincts of this city yesterday, after having bitten two or three persons and several cows.

“ As the season is coming on when that dreadful disease, the hydrophobia, more commonly prevails among the canine race, we hasten to lay before our readers the following account of a remedy, which has every appearance of being effectual:”

“ *STATE OF NEW YORK.*

“ *Comptroller's Office.*

“ Pursuant to the direction of an act entitled ‘ An act for granting a compensation to John M. Crous for discovering and publishing a cure for the canine madness,’ passed the second of February, 1806, I do hereby certify, that the said John M. Crous hath this day deposited in this office a certain writing, purporting to be the remedy used by him with certain success, for more than twenty years past, for the cure of the hydrophobia, or canine madness, which writing is in the words and figures following, to wit:

‘ CURE FOR THE BITE OF A MAD DOG.

‘ The following is an account and prescription of a cure for the hydrophobia, or canine madness, made by John M. Crous,

in conformity to an act of the legislature of this state of New York, passed in their present session, viz.

‘ 1st, Take one ounce of the jaw-bone of a dog, burned and pulverized, or pounded to fine dust.

‘ 2dly, Take the false tongue of a newly foaled colt; let that be also dried and pulverized; and,

‘ 3dly, Take one scruple of the verdigrease which is raised on the surface of old copper by lying in moist earth: the coppers of George I. or II. are the purest and best. Mix these ingredients together, and if the patient be an adult, or full grown, take the common tea-spoon-full a-day, and so in proportion for a child according to its age, one-half of the copper of the above kind, if to be had; if not, then a small increased quantity of any baser metal of the same kind: this to be taken in a small quantity of water.

‘ The next morning, fasting (or before eating), repeat the same as before. This, if complied with after the biting of the dog, or before symptoms of madness, will effectually prevent any appearance of the disorder; but if after the symptoms appear, a physician must immediately be applied to, to administer the following, viz.

‘ *Three* drams (or 180 grains) of verdigrease of the kind before mentioned, mixed with half an ounce of calomel, to be taken at one dose. This quantity the physician need not fear to administer, as the re-action of the venom then diffused through the whole system of the patient, neutralizes considerably the powerful quality of the medicine.

‘ Secondly, if in three hours thereafter the patient is not completely relieved, administer four grains of pure opium, or one.

‘ N. B. The patient must be careful to avoid the use of milk for several days after taking any of the foregoing medicine.

‘ JOHN M. CROUS.

‘ *Albany. ss.* John M. Crous being duly sworn, deposeth, that the above account and prescription for the remedy and cure for the hydrophobia, or canine madness, is a just and true account and prescription, and the only one used and practised upon by himself more than twenty years past, and which has not failed of perfect success in any instance of the vast number of unfortunate human beings who have been bitten by mad dogs, and who have applied to him, the deponent, for relief.

‘ JOHN M. CROUS.

‘ *Sworn the 24th day of March, 1806, before me, James Kent, chief justice, &c.*

‘ Mem.—The word *three* in the last line of the first page written before an erasure, and then sworn to.

‘ J. KENT.’

“ Given under my hand, at Albany, the 25th day of March, 1806.

“ ELISHA JENKINS, *Comptroller.*”

Upon the above extraordinary act, I will make only this remark. The good people of Virginia certainly had a right to buy the snake stone of Mr. Micow with their own money, but for a legislative body to throw away the public treasure in the

purchase of a secret, without first knowing whether the prescription was even reconcileable to the principles of common sense, and which, when revealed, must strike every man as the most abominable absurdity, is a conduct highly unjustifiable, and must subject them to the ridicule of all the civilized world.

The successful event of a case of tetanus in consequence of a strangury being brought on by the use of tincture of cantharides, given by Dr. Samuel Brown, of Lexington, Kentucky*, and the striking analogy subsisting between that and the disease produced by the action of the canine virus on the human system, induced me to recommend it in the latter complaint†. This advice I afterwards enforced‡ by new arguments derived from the relation of cures by Mr. Andry|| of that disease, by large doses of cantharides. Since that period I have been informed by several medical friends, that the tincture had either failed in the tetanus, or that a strangury could not be effected**. Large doses should therefore be given, when it is employed, and at an early period of those diseases, as the difficulty of making an impression with all medicines, upon the system while labouring

* See Medical Repository, vol. iv.

† Observations, &c.

‡ Printed sheet—June, 1802.

|| Memoir. Acad. Roy. Med. Paris, vol. i.

** Dr. Coxe gave 30 drops every hour to a boy, on the third day of tetanus; after the fourth dose, "violent pains of the stomach and strangury rendered its exhibition improper. The symptoms abated from the time this effect took place, but the symptoms of strangury no sooner subsided the next day, than the tetanic symptoms recurred. The strangury returned slightly next day, but it could not afterwards be produced to the proper degree to do good, although large doses of the tincture were given. The wine and opium which were also taken probably prevented its recurrence." See Medical Museum, vol. i.

under either complaint is well known. Its operation too should not be interrupted by the use of other medicines.

Another remedy, when its administration is practicable, might be tried. I mean *hydro-carbonate*. It is well known that the irritability of the system in both diseases, but particularly in that produced by the canine virus, is excessive, and that this constitutes one of the greatest obstacles to the administration of medicines. The warm bath, opium, all the remedies which so effectually remove this symptom in other diseases, have not the smallest effect in this, however large the dose. Those who have seen the disease will agree with me that it has no parallel in the list of human maladies; and as the antispasmodic virtues of the hydro-carbonate gas have been fully ascertained, and *we are yet on the look out for a remedy*, there can be no objection to a trial of it, as proposed some years since by Mr. Bar*. Pneumatic medicine has not found any advocates in this city; the success of the European practitioners, however, especially Dr. Thornton, ought to induce a trial of airs which have been found salutary, particularly in those diseases in which physicians so seldom give relief by other remedies†.

* Beddoes' Communications.

† Thus Dr. Thornton has lately announced his success in the cure of two cases of asthma, by causing the patients to inhale oxygen gas. He had before recorded a case of the same disease, which appeared to be a gouty affection, cured by the same remedy. See Tilloch, vol. vi.

“ A deterioration of atmospheric air, by a mixture of hydro-carbonate, has been found advantageous in epilepsy, and other convulsive diseases in young and plethoric habits, especially where the fits recurred in sleep. By moderating this irritation, the fits ceased; the pulse was reduced in frequency, and natural repose took place. Where sleep has been broken, and a habit of nocturnal watchfulness induced, it has been proposed, as a counteracting remedy, and under the sanction of experience. A reduced atmosphere, by a number of

Should the irritability be found to abate after the inhalation of *hydro-carbonate*, the difficulty of swallowing might probably be overcome, and allow of the exhibition of wine and other stimulants to cure the disease. But in the country, the use of this remedy is not to be expected, and, even in this city, a patient might die before an apparatus could be got ready for a trial of it. Other applications, therefore, calculated to produce similar effects, must be sought for; and among these, frictions of the body with warm oil, and the use of the powder of *stramonium* leaves, or extract, in doses of two grains, as I formerly recommended*, appear to promise most. The *volatile alkali* is also entitled to attention in this disease. We have the most respectable testimony of the successful exhibition of this remedy in cases of bites of serpents in the East Indies, and there are some facts related of its having cured the disease now under consideration, when applied to the wound, and by internal exhibitions†.

candles burning in a bed-chamber on the rejoicing night for lord Howe's victory, procured a physician in this situation a night of repose unexampled for several years, and to his servant, in the same chamber, profound sleep. Other cases corroborated its hypnotic virtues, and might give birth to the proposal of administering it in hydrophobia, where high irritation and consequent watchfulness harass the patient." Hamilton on Hydrophobia, vol. ii, p. 74.

* Inaugural Dissertation: 1792. Observations, &c.: 1801.

† See Journal de Physique: year 8. The form was common volatile spirits, 12 or 15 drops in a glass of water for a dose.

A Brief View of the Morbid Appearances observed after Death in Yellow Fever in different parts of the World. By EDWARD LOWBER, M. D., of Philadelphia.

DR. MITCHELL, of Virginia, is among the first who examined the bodies of those dead of the yellow fever. He made his dissections in the years 1741 and 2, of which, in a letter to governor Colden, he gives the following account: The liver, he says, was generally found turgid and plump, and its concave surface of a deep black colour; round the gall-bladder seeming to be mortified or corrupted. The gall-bladder contained a black ropy atrabilis, which resembled bruised or mortified blood, evacuated from the mortified parts of the liver surrounding. It would, however, stain a knife or probe thrust into it, which is a proof of its origin. The stomach had its villous, and, in one instance, its peritoneal coat inflamed. It contained nothing but a small quantity of drink, taken just before death, and some of the black choler, resembling that in the gall-bladder, floating upon it, which was of a blacker colour here than in the gall-bladder itself.

Upon inspecting the viscera in this same disease, Dr. Lining, of Charleston, found, on the inside of the stomach, several carbuncles, or gangrenous spots; and says, that in all he examined he not only observed the same appearance, but found the blood very fluid, and the vessels of the viscera much distended: from whence, he says, he was very inclinable to think, when the disease was not conquered in its first stadium, that about the termination of the fever there was a metastasis of the morbid matter to the viscera.

Dr. Hillary, in his observations on the putrid bilious fever, commonly called the yellow fever of the West India islands, says, "upon opening the bodies of those who die of this disease, we generally find the gall-bladder, and biliary ducts, turgid and filled with a putrid blackish bile, and the liver and stomach, and the adjoining parts, full of livid, blackish, mortified spots, and sometimes gangrenous in those, as also several other parts of the body."

In several bodies examined by Dr. Jackson, the morbid appearances varied in different cases. When the irritation had been great, and the re-action of the vascular system violent, in the early stage of the disease, the liver, brain, and very frequently the inner surface of the stomach, exhibited marks of derangement. In what is called the first form of the yellow fever, the vessels of the brain were frequently found distended with blood, and, in some particular instances, its membranes were inflamed. The inner surface of the stomach often exhibited large spots or circles of a bright red, resembling actual inflammation, in the centre of which were frequently seen small points, like beginning gangrene. The villous was sometimes in the act of separating, and, in some places, actually separated, from the nervous coat of the stomach. The appearances of the liver were various. In some instances its vessels were greatly distended, and the biliary ducts preternaturally enlarged. In other instances it was uncommonly large, black, and distended, as if suffocated with blood, and its membranes were ruptured. The urinary bladder was often small and contracted, and on its internal surface were bloody spots. It seldom contained urine.

In the Medical Repository of New York, vol. ii, p. 249, we have an interesting account of three dissections made by Drs.

Warren and Rand, during the epidemic which prevailed at Boston, in 1798. In their first examination they found the stomach with every mark of inflammation; but in the second and third, it was nearly natural. In every instance the liver was greatly inflamed. The lungs were *immensely* diseased. In one case, eight or ten ounces of firmly coagulated blood were found in the cavity of the thorax. The brain of the second subject they examined, was astonishingly distended with blood, and one or two ounces of serum were effused between the dura and pia mater.

Dr. Chisholm, in the first volume of the second edition of his work on the malignant pestilential fever, p. 183, has published an account of several dissections made by himself and others. In every case which came under his own inspection, the liver was much diseased. In the first case, which, he says, resembled all the others, the liver had shrunk to less than one half its natural size, was uncommonly flaccid, and of a colour nearly approaching a buff. The gall-bladder was flaccid and greyish, and contained a small quantity of very dark-coloured ropy bile. The intestines were inflated, inflamed, and sphacelated, particularly the duodenum a little beyond the pylorus. The lungs were highly inflamed, and of a lively texture and hue. The bladder contained near three quarts of urine, and was dilated above the pubis. Its coats were much thickened. From this account of Dr. Chisholm, the stomach appears to have been diseased in no one instance.

The following dissections were made at the City Hospital, during the prevalence of the yellow fever at Philadelphia, in 1805 :

DISSECTION I.

A child of six years of age was the subject of the first examination. In addition to the usual symptoms of yellow fever, this case was attended with constant stupor. Upon opening the body, the following appearances were observed :

The stomach was inflamed in one or two spots, and contained a considerable quantity of black, but not very fluid matter. The discharge in this instance, I suspect, reduced the inflammation, which before death, in all probability, was very considerable. The liver and all its appendages were natural. The bile and black vomit were compared, but found to have not the least resemblance. The vessels of the brain were not in the least turgid, and the ventricles natural. An intussusceptio occurred in two portions of the small intestines, which, like the stomach, were inflamed.

DISSECTION II.

Upon opening the abdomen of a young man, the stomach was found contracted, and its internal coat of a reddish-brown colour. It contained black vomit, the odour of which was not a little offensive. In cutting through the œsophagus, in order to remove the stomach, a worm was divided. This appearance of worms was not at all uncommon. The internal coat of the stomach was remarkably corrugated. Notwithstanding, the patient never once complained of any thing like spasm, nor, during his indisposition, did he once attempt to vomit.

DISSECTION III.

In the third dissection the stomach was found much inflamed and distended. In some parts of it the villous coat had the appearance of ulceration. The intestines, as well as the sto-

mach, contained much black matter. The unusually black colour of the intestines, I suspect, proceeded from the large quantity of black secretion they contained. The liver was natural, except in colour, which was yellow.

DISSECTION IV.

Fourteen days previous to his death, J. H. was attacked with the usual symptoms of the malignant yellow fever. In its first stage the disease was highly inflammatory, and was, therefore, treated with depleting remedies, of which blood-letting was much inferior to purging. Upon inspection, the stomach was found without inflammation, but having its coats, in some degree, thickened. The intestines were loaded with worms and black secretion. The liver was of its natural size, but had a yellow colour. Although this patient never complained of any affection about the region of the pubis, the bladder was found considerably diseased.

DISSECTION V.

The symptoms in this case were nothing uncommon. Upon opening the thorax we found its contents natural, the pericardium excepted, which contained a small quantity of yellow serum. The contents of the abdomen were in a very different state. The stomach, towards the cardia, was much inflamed, and contained a considerable quantity of black flocculent matter. On one portion of the internal coat of the stomach there was a circumscribed spot evidently gangrenous. The jejunum and ilium were inflamed, and contained a black secretion. The liver and gall-bladder, as well as the bile, were natural. The urinary bladder was considerably distended. The scrotum was observed to have advanced much more rapidly towards putrefaction than any of the surrounding parts.

DISSECTION VI.

In this case, although the morbid appearances indicated great disease, the symptoms, during the indisposition of the patient, were by no means violent. The patient was a man aged about thirty, and died a short time after his admission into the hospital. Upon opening the abdomen, the stomach was found of the natural size, but extensively inflamed, and in one spot gangrenous, and containing a large quantity of black flocculent matter. These flocculi had much the appearance of coagulated blood, differing in some degree, perhaps in consequence of having remained for some time in the stomach. The small intestines were very considerably inflamed, and the jejunum and ilium contained a large quantity of black matter. The colon was more natural, though not entirely free from disease. The liver was considerably enlarged, indurated, and yellow. The gall-bladder was larger than natural. The pancreas was also indurated. The coats of the urinary bladder were thickened, and the abdomen contained a quantity of yellow serum. As this man had been extremely intemperate in the use of spiritous liquors, there is no doubt but that the morbid appearances of the liver and pancreas ought to be referred to that practice.

DISSECTION VII.

J. C. was admitted into the city hospital with the usual symptoms of the yellow fever, which on the fifth day terminated his existence. During his indisposition he complained of suppression of urine, and was affected with considerable stupor. The brain was examined, but, contrary to expectation, was found not in the least diseased. The stomach was slightly inflamed, and contained none of the black vomit. The small intestines were inflamed, and contained bloody mucus. The liver was natural in its size and texture, but of a slightly yellow

colour. The urinary bladder was of its natural size, but considerably inflamed, and in some parts of it gangrenous.

DISSECTIONS VIII AND IX.

The appearances after death, in these two cases, were very similar. In one the brain was examined, but found to deviate in no respect from a natural state. The stomach of both was inflamed, and contained black matter. The intestines of one were natural, of the other inflamed. The liver, its yellow colour excepted, was natural. The gall-bladder was small, and its bile very different in appearance from the black vomit in the stomach. In one of the cases the urinary bladder was contracted to so small a size that its cavity was nearly obliterated.

DISSECTIONS X AND XI.

The appearances after death in these two dissections were very similar, but the symptoms were as dissimilar. In one of them, during the whole indisposition, it was impossible to induce him to take drink, nourishment, or medicine; and if an attempt were made to force them upon him, the nurse was in danger of being bitten. The symptoms were evidently hydrophobic, and, had circumstances permitted, the trachea would have been examined. Upon opening the bodies I found the stomachs considerably inflamed, and containing black vomit. The intestines were nearly natural. In one of the cases the liver was natural; in the other its concave surface was of a blue colour. The brain examined was natural.

DISSECTIONS XII, XIII, AND XIV.

In these three cases the stomach was almost the only organ affected. The inflammation in one case was violent, but in

the other two it was inconsiderable. The intestines, except in one case, when the inflammation had been pretty violent, were nearly natural. In two of the cases the liver was natural; in the other its concave surface was nearly the colour of the spleen. The gall-bladder was much contracted, as also the urinary bladder, which in one case contained a small quantity of yellow fluid.

DISSECTION XV.

This case terminated in death on the fourth day. Upon examination I found the stomach slightly inflamed, and containing a large quantity of black flocculent matter. The intestines and their contents were natural. The liver was natural, and the gall-bladder considerably distended. The blood in the ventricles of the heart was very fluid.

DISSECTION XVI.

M. L. the subject of the 16th dissection, in a short time after being attacked with symptoms of the malignant fever, was admitted into the city hospital. During his illness in the hospital he voided no urine, but perspired most profusely. This was particularly the case after coming out of the warm bath. His eyes were inflamed, and his countenance indicated a most malignant disease. The viscera, upon examination, exhibited the following appearances: the stomach was highly inflamed, and its internal coat remarkably corrugated. The inflammation was not, as is most usual, in spots; but it occupied the whole of the internal coat of the stomach. Its contents were natural. The liver, gall-bladder, and its contents, were all natural. The kidneys were also natural. The bladder was contracted to a very small size, and contained not more than a dram of urine.

DISSECTION XVII.

C. M. was admitted into the hospital with symptoms of the yellow fever assuming the type of an intermittent. The intermittent was so well marked, and the accession of the chilly fit succeeded by fever, so regular, that the bark was prescribed without hesitation. For a time the remedy appeared to have done every thing desired. At length, however, the disease assumed its most common garb, and suddenly terminated in black vomit and death. Upon opening the thorax I found the left lung adhering to the pleura in every direction. The right lung was natural. The pericardium contained a portion of yellow serum. The stomach was very considerably distended, and contained, upon admeasurement, thirty-two ounces of black vomit. Near the pylorus was a gangrenous spot the size of a half-dollar piece. The intestines contained a large quantity of black matter. The liver was natural. Its gall-bladder was much contracted, and contained a small quantity of viscid bile. The urinary bladder was also very much contracted.

DISSECTION XVIII.

The subject of this dissection was a sailor, admitted into the hospital without pulse. The contents of the thorax were natural. The stomach was slightly inflamed, and contained a chocolate-coloured matter. The intestines and their peritoneal coat (in a small degree) were inflamed. The superior surface of the liver was natural, its inferior of a bluish colour. The kidneys were natural. The urinary bladder was contracted to a very small size.

DISSECTIONS XIX, XX, AND XXI.

The appearances observed in these three cases were very similar to those already mentioned. The stomach and intestines

were diseased, as in the other cases, while the liver was natural. The urinary bladder was much contracted.

OF THE BLACK VOMIT.

Having so frequently mentioned the morbid appearance of black vomit in the preceding dissections, I shall now give a short description of it.

The black vomit, when ejected from the stomach in small quantities, is not black, but consists of a dark brown flaky substance, resembling the grounds of spoiled porter, suspended in a fluid, lightly viscid, becoming nearly transparent when at rest, by the subsiding of the brown particles: when the vomit is discharged in large quantities, it is of a black colour, resembling the grounds of strong coffee, slightly fetid. After standing a few hours, a deposition takes place of a black flaky substance, from a fluid, similar in colour to an infusion of green tea, moderately viscid, having a very faint sweetish animal odour, and rather a saccharine taste. The flaky particles which precipitate are various in size, and of a very irregular figure, not unfrequently mixed with pieces of the villous coat of the stomach, which may be distinguished by their being longer in subsiding to the bottom of the vessel than the true flaky substance. There is some disproportion between the flaky substance and the yellow-coloured fluid: the former is generally greater in quantity, and, when separated, is readily incorporated by the least agitation of the vessel, and, when kept in a phial well corked for eight or ten days, assumes rather an agreeable odour, and is extremely brisk, like fermenting beer*.

* See Dr. Cathrall's Account of the Black Vomit.

Having given this short account of the nature of the black vomit, it now remains to ascertain by what viscus it is produced. When the yellow fever first made its appearance, physicians almost uniformly believed the black vomit a vitiated secretion of bile. This opinion appears to have prevailed with many till the year 1800, when Dr. Physick published a paper in the Medical Repository of New York, in which he satisfactorily proved the black vomit to be a discharge from the stomach, and not, as had been supposed, a secretion from the liver. About this time Dr. Saunderson advanced the same opinion. The correctness of the opinion of these two gentlemen will appear from the following arguments:

1. If the darkest-coloured bile be spread thinly over a white surface, such as the skin, it loses the black colour (in which respect, when accumulated in some quantity, it resembles the black vomit) it had in its accumulated state, and appears of a yellowish-green colour. If the black vomit be treated in the same way, it retains its black or dark brown appearance.

2. The bile in the gall-bladder has its common bitter taste; but the black vomit is in general nearly insipid. This fact has been ascertained by many persons, and, among others, by the late Dr. S. Cooper. Patients, in the act of vomiting, have often ascertained it.

3. The black vomit differs materially from any fluid that can be produced, by a mixture of bile with the fluids of the stomach or intestines.

4. I have seen more than thirty ounces of black vomit in the stomach of a subject, whose gall-bladder was small and contracted, and contained a very inconsiderable portion of viscid

bile. This certainly could not have been the case had the black vomit been discharged from the biliary ducts. In other instances, the gall-bladder has contained a transparent and colourless, and sometimes a purulent coloured fluid, while the stomach contained black vomit of the nature above described.

Singular Case of the Discharge of Worms from the Abdomen and Vagina. By Dr. JACOB OUTWATER.

Orange Town, February, 1808.

DEAR SIR,

I N a late number of your Museum I met with Dr. Wendell's reply to Dr. Gough, published in a former number. If you consider the following case of sufficient importance to decide the controversy between those two gentlemen, you are at liberty to give it a place in your Museum.

In the month of February, 1803, I was requested to visit a daughter of Mr. James Sarvan, aged ten years. She had been unwell about four months before I saw her. Her mother gave me the following history of her case: from the beginning she complained of pain at the pit of her stomach (*scrobiculus cordis*) with very little intermission. Sometimes the pain extended down to the navel. In this last situation she was in extreme agony for about an hour, when the pain would gradually go off again, but never so as to leave her entirely free. Those severe attacks would return sometimes twice in one day, and never at a longer interval than two days during the whole period of the illness. She also informed me that she had slight attacks of fever every day, which went off in the course of the night with

profuse sweating. Her bowels had been very irregular; her appetite was totally lost, at other times quite voracious.

About three weeks previous to my visit, her abdomen began to swell, and she also complained of pain and intolerable itching within the cavity of the vagina. On examination, her mother discovered that the external labia were much swollen, and, when handled, were quite painful, which was somewhat relieved by placing her over the steam of warm water.

I shall now describe the situation I found her in. She was very much emaciated; her pulse small and frequent; her teeth, tongue, and fauces were covered with a black crust; breathing short and laborious; her eyes deep sunk in their sockets; cold extremities; diarrhœa; urine, pale and in small quantity; irregular delirium; cold, partial sweats; sharp, shooting pains through different parts of the abdomen; œdematous swelling of the feet and ancles.

The swelling of her belly, which had increased every day from the beginning, had now acquired an enormous size. On examination, it presented the same sensation to my fingers as I have before observed in tympanites, though I could not persuade myself that this was a case of this kind. I examined carefully every part of the abdomen, and found, about two inches below the sternum, evident signs of fluctuation. Whether the contents were pus or water, I could not determine; but the propriety of an operation was sufficiently obvious: her extremely emaciated and feeble condition led me almost to despair of a favourable issue; but the certainty of a speedy dissolution in case nothing was done (however hazardous the attempt), I could not hesitate a moment in the choice. I told

her parents the danger of her situation, and the necessity of performing an operation, and they very readily acquiesced.

After passing a bandage round the abdomen, I made an incision about half an inch long, quite through the parietes of the abdomen, at the part where I discovered a fluctuation, and let out about two quarts of thin fetid matter. The smell was intolerable, notwithstanding the doors and windows were open. I found my bandage quite useful while the matter was discharging; without it, I am persuaded, my patient would have sunk before I obtained that quantity, as she discovered signs of syncope almost immediately after the incision was made, notwithstanding the bandage was well managed by my assistant. I did not dare to draw off all the matter at once, but introduced a piece of lint in the wound, and gave her an anodyne. I directed her mother to take out the lint after the expiration of two or three hours, and suffer the matter to discharge for a few minutes, and to repeat this practice every three or four hours for the first day; and the following, to place the lint over the wound, and to tighten the bandage whenever she found it loose. She was also directed to bathe her abdomen frequently with warm brandy, to repeat the anodyne if the pain should return; and left her bark and serpentaria, to be taken in the form of decoction.

She felt much relieved after the operation, and got two or three hours' sleep. The following day she complained much of the disagreeable smell from the wound; said it made her sick; and her mother was obliged to keep the bed-clothes close around her neck, and cloths wet with vinegar to her nose. It was several weeks before the matter which discharged from the wound assumed a better appearance, and became less fetid.

About a fortnight after the operation, she complained of pain near the incision. Her mother removed the dressings, and a living worm (teretes) had perforated the skin, and had made its way out about five inches. She took hold of it gently, and drew it out. It measured nine inches. A few hours after she complained again, when the dressings were removed, and another taken away, which measured six inches. The first came through about an inch from the incision, the second within half an inch. After this she felt no uneasiness at that part. The colour and consistence of the matter would vary considerably in the course of a week: sometimes the appearance of good pus without fætor, and, on the same day, would change to the colour and consistence of honey, attended with a very offensive smell. Eight weeks after the operation, the matter suddenly left the wound, and found its way through the vagina, and, in the course of a few hours, she complained of pain and itching in that part, which was soon relieved, by her mother taking three very large living worms (of the same species as those that came out near the wound) from the vagina. The matter continued to flow from this passage till the tenth week from the time I made the incision, and then stopt. Her wounds being all closed, she recruited fast every day, and has ever since enjoyed good health.

I hope the relation of this case will have a tendency to do away the idea, entertained by many physicians, of the impossibility of a patient surviving, in case worms should pierce and pass through the intestines into the cavity of the abdomen; and we certainly cannot hesitate hereafter to believe, that worms may with as much facility get into the cavity of the

bladder, and pass out through the urethra, without proving fatal, as through the parts mentioned in the case of my patient.

With respect, I am, dear Sir,

Your humble servant,

JACOB OUTWATER.

Dr. John Redman Coxe.

Account of the Influenza as it appeared at Princeton, N. J.
By Dr. VANCELEVE.

THE winter of 1806-7 set in very cold, and continued so until the beginning of February. After this, until late in the spring, the weather was very changeable. In the latter part of the month of March, and first of April, there were several great falls of snow, much more than had fallen throughout the whole of the winter. The summer had been uncommonly wet, but the weather, in general, was mild and pleasant. This village has been remarkably free from epidemics of all kinds for several years; even the dysentery and scarlatina anginosa, which are almost the only diseases that have become epidemic here, and to which this place seems particularly subject, had not visited us for a much longer time than usual. About the 10th of August the influenza made its appearance: there were, however, but few cases until the 20th. It then became more general, and continued to spread with great rapidity until the 1st of September. After this, the number of new cases began to diminish, and but few appeared after the 15th of the same month. This disease commenced in the ordinary manner of a catarrh. A soreness in the flesh, an aching of the bones, and a distressing lassitude, many complained of, a day or two before the disease assumed its most serious form. In some it was ushered in by a chill, followed by a fever, pain in

the head, eyes, and back. In a few instances, a pain in the stomach and bowels, followed by a vomiting or diarrhœa, were the first indications of the disease. Others, first complained of a hoarseness, soreness of the throat, and a cough; but a symptom, perhaps more general and characteristic of the epidemic than any other, was a peculiar soreness and rawness in the fore part of the thorax, immediately behind the sternum, which was rendered exceedingly painful and distressing by the cough. Many were attacked with an instantaneous and excessive flow of tears, attended with inflammation and an intolerance of light. The pain in the head and soreness of the flesh were also very constant symptoms, and were often prolonged for many days, unless removed by proper treatment. This pain in the head was rendered excessively severe by the cough, which was one of the most troublesome attendants of the disease. The tongue was generally moist and of a whitish colour. The nose was affected, as is common in catarrhs. The countenance, together with the whole surface of the body, often assumed a very florid appearance. It was attended generally with a frequent and soft pulse, sometimes full and but rarely hard. A sweating often commenced with the disease, and continued profusely for several days, but without any abatement of the symptoms. Persons of all classes and ages were subject to it; but children were far more exempt from it, and had it much more mildly than adults. Persons of delicate constitutions and subject to pulmonary complaints, were more severely handled than others. It proved fatal but in one instance where the influenza was the primary disease; and this was a woman near eighty-four years of age. She had no medical assistance until the day preceding her death. Pregnant women, who were otherwise healthy, did not suffer more from it than others. In one instance, a woman of a delicate constitution, by imprudent exposure to the wet and night air, brought

on a miscarriage in the sixth month, and died the second day. Immediately after her delivery, she was attacked with a laborious and difficult respiration, a cough, and other symptoms highly characteristic of the peripneumonia notha, to which she fell a victim in less than thirty-six hours. Another woman, in the ninth month of her pregnancy, who had the hydrothorax to a great degree, attended with a general anasarca, had all of her symptoms aggravated by the influenza, and died on the fifth day after her delivery. I do not think that women were more subject to it than men. Of those persons attended by me, the number of each was nearly equal; nor could I perceive that females were more severely afflicted by it than males.

The disease, when left to itself, continued no definite length of time. In those who were young, and in other respects healthy, it began to subside in about two or three days, but, in such as were aged or infirm, it was sometimes prolonged to the fifth, sixth, or perhaps seventh day. Patients were uniformly left in a remarkably weak state by the disease, and did not recover their strength so rapidly as convalescents usually do from ordinary diseases.

As the influenza frequently commenced with a sweating, it seemed to point out that evacuation as one designed by nature to carry it off. Diaphoretics were accordingly resorted to, and administered with freedom, but did not answer the end expected from them. They seldom removed the fever, pain in the head, limbs, or any other symptom, until after the disease had continued for several days; and even when it appeared to carry off the complaint, the debility that followed was evidently greater than that which succeeded other prompt and copious evacuations. . This debility, however, was doubtless, in part, owing to the longer duration of the disease, as well as to the

inefficacy of the remedy. Among other medicines, the bone-set, or common thoroughwort, was plentifully and assiduously used by many, but without any material advantage when administered merely as a diaphoretic, and, if ever it was beneficial, it was from its emetic or purgative operation.

Blood-letting was practised, whenever indicated by the pulse; but as the pulse was mostly frequent and soft, this evacuation was not so often advised as the other symptoms would seem to indicate; still, however, when the pulmonic affection was urgent, or the pain in the head and limbs uncommonly violent, this evacuation was resorted to, but, I must confess, with much less relief than is generally derived from this operation in affections attended with such strong and urgent symptoms. Where blood-letting was not pointed out by the hardness and fulness of the pulse, the benefit was scarcely perceptible, and, in some instances, I think, injurious, for it occasioned an unnecessary prostration of strength, and finally retarded the recovery of the patient. Blood-letting was, at length, only advised when evidently indicated by the pulse, which was not more frequently than one in ten, of those who were so seriously ill as to apply for medical assistance. And the cases that required a repetition of the operation were extremely rare.

Purgatives were among the remedies first resorted to for the removal of this disease, and sometimes with great and singular advantage, for, in some instances, they were especially indicated by severe and distressing pains in the bowels. But it was principally in cases of this kind, and those attended with an undue degree of costiveness, that the good effects of purgatives were manifested. They were often and repeatedly tried where these symptoms were wanting, but the success resulting from their administration was partial and uncertain. This

want of success was not a little unexpected to me, for, after having witnessed the inefficacy of sweating and blood-letting in speedily removing the disease, my attention was more especially turned to purgatives. In them I placed great and unsuspected reliance; the symptoms of the epidemic also were such as to induce a belief, that, from the operation of this class of medicines, a speedy solution of the disease might be expected. In this, however, I was greatly disappointed. The symptoms, although frequently mitigated, were seldom removed, but continued with serious violence throughout the ordinary course of the disease. Calomel, jalap, and rhubarb were used principally; but others more mild, and of a less drastic nature, were not neglected; all fell far short of that success anxiously expected from them. Even the *bone-set*, so highly celebrated by many distinguished medical characters, when having no other than a purgative operation, as it will readily have when carefully administered, was an insufficient and ineffectual remedy.

The class of medicines next resorted to were emetics, which, of all others, were attended with the most certain and complete success. As this disease was attended with a great degree of debility, it was observed, that any violent operation of medicine of any kind was followed by less beneficial effects than when it operated more mildly: gentle emetics were therefore always advised, and were always useful. The medicine used for this purpose, and which was found to be more convenient and effectual than any other, was the antimonial wine, prepared after the formula in the American Dispensatory. The first case in which the salutary effects of this practice was fully and clearly exhibited was in a lady, who naturally was possessed of a very delicate constitution, and whose health had been recently much impaired by sea-sickness, followed by fever.

The influenza attacked her with all its virulence. An excruciating pain in her head, eyes, back, and limbs, high fever, attended with a frequent, soft, and small pulse, cough, soreness of the throat and chest, an intolerance of light and noise, were the symptoms more especially urgent. Antimonial wine, to be administered in small and repeated doses until it should operate as an emetic, was prescribed. Six hours afterwards she was visited. She had been puked gently, and had discharged a large quantity of bile, which was extremely acrid and nauseous. The pain in the head was much abated; that in the limbs, together with the fever, had almost entirely subsided. Neither the fever, cough, nor the pain returned, and in a day or two she enjoyed her usual health. The same evening the antimonial wine was prescribed for another lady, of a strong and healthy constitution, who had been attacked with equal, if not increased severity in every respect. The pain in her limbs was so excessive, that she compared it to a tooth-ach extending to every part of the body. The operation of the medicine was attended with the same complete and instantaneous success. The following morning, not a symptom of the disease remained, debility alone excepted. In the same family, another woman was handled equally severe, but whose constitution was so much impaired, that I really feared to venture upon full vomiting. She was therefore purged for two days successively, with but little, if any, abatement of the symptoms. The antimonial wine was at length resorted to, and was followed with the same success. Were it necessary, I could mention perhaps nearly a hundred cases that came under my immediate notice, and which, with very few exceptions, terminated in the same happy manner. In every instance the symptoms were much relieved; in a few, however, a slight degree of pain and fever continued, but subsided in a day or two at most. It is necessary to remark, that, in many

instances, the wine had a purgative as well as an emetic operation; and, in some inveterate cases, it was administered with the intention of operating both ways. So certain and so speedy was the cure effected by the antimonial wine, that many of the inhabitants of this place, but more especially the students of the college, who had seen its operation on their companions, procured it for themselves, and administered it without any medical advice, and with the same result. Nor was it here alone that this method of treatment was so successful. A neighbouring physician informed me that he had found gentle antimonial emetics far more efficacious than any other medicine he had used; and that, after various fruitless trials with other remedies, he at length had succeeded beyond his most sanguine expectations with this. I have also been informed of several other medical gentlemen who adopted the same practice, and seldom found any thing else necessary, except anodynes, which they all used in the after-treatment. It happened, that, in almost every case in which full vomiting was excited, large quantities of bile, uncommonly nauseous, was discharged; and if in any instance this practice was not attended with that complete success mentioned above, it was where this offensive matter was not at all, or but partially discharged. In every case, the pores were so effectually opened by the operation of the wine, that a gentle and comfortable sweating was produced, which carried off the remnants of the disease in a day or two, at most. The perspiration thus excited was of such a salutary nature, that it was necessary gently to encourage it; for if it was checked too early or suddenly, it caused a slight return of the pain and soreness in the flesh, but which was always immediately removed by the renewal of the perspiration.

That it was the emetic operation, and not the sweating or purging, that produced this speedy solution of the disease, I infer from the two following facts:—1st, when the wine was given so as to operate on the skin only, although assisted by a plentiful use of diluents, the duration of the disease was not materially shorter than when left to nature alone;—2d, when given so as to have no other than a purgative operation, although it sometimes abated, yet it never caused so quick and effectual a removal of all the symptoms.

The cough, notwithstanding it was much benefited in general, was less effectually relieved, than any other symptom. It often continued with unremitting violence for some days, nay, even weeks. Anodynes, however, were commonly a speedy and certain cure for this troublesome attendant on the disease. They were administered in a variety of forms; but the *tinctura opii camphorata* of the Edinburgh Dispensatory was thought preferable, and more convenient than any of the others. It was given freely, both day and night, when the urgency of the symptoms demanded it. By it, some obstinate and extremely distressing coughs were cured in a few days.

Demulcents were used, with great advantage, in promoting that mild perspiration which was so necessary, after the first and most violent stage of the disease was removed. Many of them were advised, but barley-water most frequently; it was generally agreeable to the patient, and answered every purpose expected from them.

Blisters were only applied where the affection of the breast was so great as to demand them, and were, as is usual in affections of that part, of great benefit.

A spare and liquid diet was necessary during the severity of the disease; but after proper evacuations, and the general abatement of the symptoms, food more nourishing, and a moderate use of good wine, were attended with evident advantage. They were useful in removing that state of debility in which patients were so often left by the disease, and without which treatment they did not recover with the usual rapidity of convalescents.

As the influenza generally terminated by sweating, it was necessary to increase the quantity of clothing; the neglect of which precaution often caused a sudden check to the perspiration, and produced many relapses. Almost every relapse was attended with a remarkable hoarseness and distressing cough; but these, for the most part, were readily removed by anodynes, and a restoration of moisture to the skin.

Whether the influenza is contagious or not, seems difficult to determine. The reasons for and against it are so numerous and plausible, that it requires more information than we are yet possessed of to decide with accuracy. That it was *apparently* communicated from one person to another, in many instances, does not admit of controversy. It sometimes appeared, that one infected person going into a family would communicate the disease to the whole or the greater part of it. This was remarkably exemplified in a family of one of my nearest neighbours. A gentleman had been on a journey, and returned home with the disease upon him. In about six or seven days afterwards, almost every one of a large family were seized with it. I have been informed, that its introduction into a neighbouring town could be traced, with apparent certainty, to a person who went there affected with it. There are also some instances of persons whose health had been

much impaired by long-continued pulmonary complaints, who have apprehended serious consequences from an attack of this disease, that have altogether avoided it by withdrawing from society, and having no communication with any, except such as were in all probability free from the infection. But, on the other hand, it is no less certain, that, in a great variety of cases, the disease *was not* communicated from one to another, even under those circumstances which are supposed to be most favourable for the propagation of contagion. It often happened that several in a family did not take it, while one or more had it severely. Some entire families, who had constant intercourse with their neighbours, escaped it altogether. In some neighbourhoods, many were attacked at the same time, without being able to trace it to any satisfactory source, and without having had sufficient communication with one another to account for the rapid spread of the disease. It also sometimes affected those who were evidently cut off from all communication with infected persons. If this disease is contagious, it acts differently from all other contagious diseases with which we are acquainted. It does not proceed with that regularity, either as to time or place, observed in the small-pox, measles, or any other known contagious disorder. The time necessary for the production of the disease, after the infection is applied to the body, is by no means ascertained; but at present appears to be extremely irregular; the infection being sometimes excited in a day or two, but at others not until after a lapse of a week or ten days. The influenza is not confined to particular districts, or tracts of country, the boundaries of which can be accurately described, as is often the case with other contagious maladies; but it pervades with great and surprising rapidity whole states, countries, and continents. These last considerations incline me to believe that it is in some way or other connected with, or dependent upon,

a particular constitution of the atmosphere. Unless this be the case, I cannot conceive how we can rationally account for the wonderful progress this disease has lately made throughout our extensive country. I am the more inclined to adopt this opinion, when I consider that those who lived in low and damp situations, exposed to fogs and exhalations from marshes or swamps, did not suffer more from it than those who resided on high and dry eminences: nor could I perceive that it assumed a more serious type where a great number were collected together. In the college of New Jersey, where the students all reside in the same building, the disease appeared in the same characteristic form, with symptoms neither more nor less severe than in the adjacent country.

Princeton, N. J. Dec. 1807.

Account of the Influenza, as it appeared in a part of Rockingham County (V.). By Dr. PEACHEY HARRISON.

*Harrisonburg, Rockingham, Virginia,
December 31st, 1807.*

SIR,

IF the following account of the influenza, as it appeared in this village, and the adjoining parts of the county, be conformable to the purposes which appear to have been contemplated in the invitation you have given to medical practitioners in the fifteenth number of your Museum, you are at liberty to make what use of it you think proper.

I am, Sir, with sentiments of great respect,

Your most obedient servant,

PEACHEY HARRISON.

Dr. John Redman Coxe.

ROCKINGHAM, of which Harrisonburg is the county-town, and distant from Philadelphia about 260 miles, is bounded on the north-west by the North Mountain, from which the Shandoah River derives several important branches ; and on the south-east by the Blue Ridge, which are distant from each other between twenty and thirty miles. The soil, throughout a great proportion of the county, is calcareous, and is well adapted to the cultivation of wheat, rye, maize, red clover, and, in the low grounds formed by the small creeks, where argil predominates, timothy and blue grass constitute excellent meadows. This district of country abounds with perennial springs ; but the water they yield holds so much lime in solution, or, to use the common phrase, is so hard, as to require *breaking*, before it is fit to be used in washing clothes ; for, when this precaution is not taken, the soap is decomposed, and its cleansing power entirely destroyed. Fruit of every kind is an uncertain crop, except along the mountains, and there, apples in many orchards are rendered unfit for use, by what is called the *bitter rot*, a disease of which the cause, so far as I have been able to learn, has not been well ascertained. Whether the default in the fruit arises from some cause inherent in the tree, or some external source unconnected with the condition of the tree, is matter, it seems to me, of great doubt. The evil, however, is a serious one ; and one that renders the rearing of an apple orchard, in this country, at this time, a labour of very uncertain advantage. This disease of apple orchards was unknown till of late years. Orchards are said to have been much less injured by it this season than they were several seasons past.

South winds are generally the precursors of our rains ; north-eastwardly winds bring our deep snows ; and those from the

north-west accompany dry, and are perhaps the cause of our coldest weather: these prevail through a large proportion of the year. All our hurricanes come from this direction: they were more frequent and destructive last spring than they were ever known before in this country. Bilious fevers are not natives of our soil. We had our share of them, however, in the extraordinary autumn of 1804. In common seasons, pure remittents and intermittents are scarcely known, at least as generated by causes existing in our own country: they have been caught in other places. We are occasionally visited by fevers, but they mostly prevail in cold weather, and are of typhous character. In the winter of 1805-6, cases of this fever were frequent, and, in every instance of which I had any knowledge, they appeared to me to be the offspring of domestic filthiness. They occurred, in every instance, in circumstances favourable to the accumulation and putrefaction of human excretions, viz. in crowded and unventilated cabins, and in families not remarkable for their cleanliness. Its attacks were slow and insidious, never being completely formed under eight or ten days. During this time the patients were not confined to their beds. It generally proved fatal by a determination to the brain. I believe I am authorized by experience to say, that early and proper depletion would generally have given safety to the patient, by preventing the formation of internal congestions; after these were formed, the pulse became lank, tremulous, and very frequent, and, in this situation, depletion and stimulation were equally useless.

The winter of 1806-7 was among the severest ever experienced in this latitude. In the months of March and April, a catarrh, accompanied with more or less of pneumonic symptoms, prevailed pretty generally through the town and its vicinity. It resembled, in almost every important particular, the late

influenza. The most remarkable differences were, more acute pains of the thorax, a more obstinate cough, and requiring a more free use of the lancet. March, and the greatest part of April were unusually cool and wet, and vegetation was remarkably backward. About the last of April the weather grew soft and pleasant, and the vegetable kingdom experienced an almost instantaneous resurrection. From the 2d, however, of May until the 13th, the progress of vegetation was greatly retarded, both by cold and drought. The wind continually stood either north-west, north, or north-east, and nearly every night there was frost, and even ice. After this date, the air became temperate and rain abundant. Vegetation again revived, and pastures soon became luxuriant. From this time, until the last of September, we had frequent, and often heavy showers of rain, accompanied with unusual electric phenomena.

It was remarkably healthy, both in town and country, from the last of April until the appearance of the influenza, which was about the 8th of September. My colleague, Dr. Cravens, and Mr. Benjamin Smith, were the first subjects of it, within the circle of my acquaintance and observation. They had returned, on the evening of the 5th, from Tyger's Valley, distant from this, in a north-west direction, about a hundred miles. On the evening of the 8th, Dr. Cravens was seized with chilliness, soreness in his muscles, pains in his head and bones; coryza, fever, and cough soon succeeded. The pain of the head was seated over the right eye, and was the most distressing of all his symptoms. On the morning of the 9th, Mr. Benjamin Smith, who lives two miles out of town, saw him; in the evening of the same day, he was seized with symptoms of influenza. They saw on their journey no complaint similar to, or what they had a right to believe was the influenza. They saw no one labouring under it after their return. From

this time until the 11th, I knew of no other cases in either town or country, and have good reason to believe there were none; for at this time we had begun to expect its appearance, having heard that it had successively attacked Winchester, Woodstock, and New-Market, the last of which places is distant eighteen miles from this; and being in the constant practice of taking notes of diseases, especially of epidemics, and never having enjoyed the opportunity of seeing *this*, since I commenced the practice of physic, I was anxious to preserve as copious notes of it as possible. I find, however, no notice of any other cases in my register than those I have mentioned, until the 11th, early in the morning of which day I was taken with soreness in my muscles, pains in my bones, and chilliness, together with an universal listlessness. In one hour after I felt the first symptom, I was extremely unwell, and, in the course of four hours, my complaint had attained its acmé. On the 12th I was able to be up, and a young man, Ottaway Cutler, sent a request for me to visit him. He lived in a distant part of the town; had been suddenly seized, about bed-time the evening before, with pains in his limbs, chilliness, and soon followed by head-ach and high fever. Pediluvium, and warm teas had brought on a sweating, but his skin was still hot, and his head violently pained; had at this time no coryza, and but little, if any, cough. A purge abated all his symptoms, and he soon recovered.

Cases now began to multiply so rapidly on every hand, that it would be impossible, and perhaps useless to attempt a further detail. A large majority of cases was so slight as not to confine the subjects of them a single hour, nor even to render them unfit for pursuing their ordinary employments. Except when they were accompanied with considerable pulmonic symptoms, the most violent cases did not confine the subjects

of them more than three or four days. Children had it more slight than adults. It was at least a week after Mr. Smith's attack that his family became the subjects of this epidemic, and not until ten days after mine that the rest of my family were taken with it. Its continuance in town was about five weeks; after the fourth it became evanescent. Very soon after its appearance in town, it fell on the adjoining neighbourhoods, and, by the 12th of October, it was only heard of in the remotest parts of the county, and had entirely disappeared by the 23d of this month. The comet was not observed in this place until about the 26th of September, and was no more to be seen after the 12th of November. There was a deficiency of rain during the months of October and November. The wind generally stood north-west.

The most prominent symptoms of this epidemic were soreness of the muscles, pains of the bones and head; the pain of the head was generally seated over one of the eyes, and the eye-balls themselves were often sore and pained; cough more or less violent and obstinate; soreness, and sometimes obscure, or even acute pains of the thorax, with more or less straitness of breathing; sneezing, a discharge of mucus from the nose, an effusion of tears, did not always, but pretty generally attended. In a large majority of cases, the pulse was remarkably soft and destitute of force; and, even in those cases attended with pneumonic symptoms of considerable strength, the pulse was so soft and weak, that, judging from that alone, I should have determined against blood-letting. The cough was the most harassing and obstinate symptom that belonged to this disease. A loss of taste and terrific dreams were very common, and, in a few instances, there was a drowsiness approaching to coma. Sweating was by no means a pathogno-

monic symptom; it did, however, frequently attend the solution of the fever, and the more violent cases of cough.

The treatment was simple. Fever, accompanied with pneumonic symptoms of any considerable force, although the pulse was not hard and full, called for the use of the lancet. Only four or five cases of this kind fell under my care. In these it was found necessary, in order to subdue the pulmonic symptoms, to let blood two or three times; and this operation was attended with its usual success in such cases. When the fever was accompanied with head-ach, and but slight pneumonic symptoms, a purge or emetic, according to circumstances, was found sufficient to alleviate these symptoms. When the fever and other symptoms were slight, the patients were advised merely to confine themselves to the house for a day or two, and to use warm drinks. An infusion of the seneca or Virginian snake root was found, in these cases, to be very useful. The few that followed this advice recovered most speedily. Opiates had a benign influence in this complaint, and more especially when the shortness of breathing and pain of the breast were slight. I preferred the compound camphorated spirit to simple laudanum, and, when the object was to appease the cough, the former, combined with the succus glycerhyszæ, constituted a delightful and efficacious remedy.

I knew of several relapses, one of which had nearly proved fatal, by inducing peripneumony. This relapse was occasioned by night exposure. Relapses were generally more tedious and severe than original attacks.

I know of but one case in which the influenza has been followed by phthisis pulmonalis, or in which it will be the probable termination.

The question whether influenza is contagious or not, I will not undertake to decide. It is a question that can only be determined by a broad survey of facts, which, it is very much to be hoped, will now be collected and furnished, and that some one of our scientific physicians will undertake to collate these facts, and finally settle this important question. I feel myself, however, disposed to declare, that, from my *present* convictions, I must arrange myself on the side of the non-contagiousness of the influenza. My convictions have arisen chiefly from the facts, of which I have given a faithful and impartial relation. The most diligent enquiry has not enabled us to trace up the attack of Dr. Cravens to any intercourse with an infected person. If Mr. Smith received the contagion from him, that contagion must have produced the disease within at least five or six hours after its reception. Ottaway Cutler appears to have taken the disease without any communication with any one infected with it. If it had been conveyed to this place by one or more infected persons, it would in all probability have been brought by travellers, or by occasional visitants from Woodstock, or New-Market; but on this supposition, public houses would have been first infected, or such private families as had received the visits of their friends from those places; but the fact was otherwise: the families of innkeepers were not the first who were attacked, and the families who were the first subjects of this epidemic have no friends in Woodstock or New-Market, and did not receive visits from any. There is one other fact, which seems to me to be of an unequivocal character, that has very lately occurred to my recollection, and which I cannot suppress. On the third day after my attack, being still considerably indisposed, I visited a family in a remote corner of Shanandoah county, in which I was at least twenty-four hours. Not one of the family, to my certain knowledge, took the influenza within ten days after this, and not until it became general in the neighbourhood.

An Essay on the Means necessary to be employed for correcting and rendering wholesome the Atmosphere of Large Cities. Read before the Philadelphia Medical Lyceum, October 28th, 1807. By ELIJAH GRIFFITHS, M. D.

THE frequent appearance of malignant fever in certain local districts, and its suddenly disappearing when cold weather sets in, have been considered, by many able observers, as unequivocal evidence of the domestic origin of that disorder. Others have considered the locality of its operation, entirely dependent on the locality of the medium that gives the contagious matter currency. The above opinions have many and powerful advocates. They will most likely long divide the scientific, and, with them, the civilized world.

One thing, however, all parties agree in, that is, that malignant fever can neither originate nor spread in a pure atmosphere; but, like the typhus fever, common to dirty, crowded, and badly ventilated places, it perishes spontaneously in an undiluted atmosphere. This is certainly contrary to the undeviating course of specifically contagious diseases, which go on uninterrupted in every climate and season, and under every different circumstance of air.

It is the intention of this essay to recommend the adoption of certain domestic arrangements, calculated to render the atmosphere of crowded cities so pure, that malignant fevers can neither originate nor spread in them. This, if it can be accomplished, will, I presume, meet the approbation of all parties, as it will implicate the opinions of none.

The contents of privies appears to be the most abundant source of offensive air, and the sole cause of bad pump water in our city. In order to remove this evil, we must construct common sewers in the middle of the streets and alleys; a small sewer will establish a communication between the privy and common sewer; two privies may be erected at the end of one small sewer. A trunk, under the bench of the privy, two feet wide, and three deep, will be sufficient; six inches of water should be admitted from the hydrant every morning, and be discharged between nine and eleven o'clock, every night, by drawing a flood-gate constructed for that purpose: with the addition of a cover to the openings in the benches of privies, we should be no longer annoyed from this quarter*. Through the same medium the offal of the kitchen may be discharged, which will take away a very considerable mass of perishable matters.

* A much readier plan to improve the pump water of the city, would be to allow a greater depth for the privies than is at present permitted by law. They are so much higher than the wells of the pumps in every part of the city, that their contents, continually percolating through the earth in all directions, necessarily reach the adjoining wells, and mix their impurities with the water. It is certain that the pump water becomes, in this city, progressively bad, according to the increase of population: the water about the commons is good, and even on and near the vacant squares of the city, as the state-house, &c. If then (as I think it) the small depth of the privies is the chief source of this evil, it only requires to sink them a little lower than the neighbouring wells, by which means the water of the wells will percolate into the privies, and of course the reverse cannot take place. It is not necessary to recal to the recollection of our citizens a certain sulphureous spring, from a pump near Sixth and Chesnut streets, some years back, and which was resorted to, by all classes, as to the Temple of Hygeia; but, alas! some defects in the adjoining Temple of Cloacina being soon afterwards repaired, the medicinal virtues of the fountain soon subsided.—EDITOR.

The common sewers can be constructed on a very economical plan, by sinking a trench in the middle of the streets, five feet wide and six feet deep. Pave the bottom of it well, and raise a brick wall, one foot thick and three feet high, on each side; cover the whole with flag stones cut straight at the sides, and applied close together; afterwards plaster with lime and sand, and pound the earth well down.

By carefully removing the contents of the present privies, after adopting the above regulations, we shall restore the pump water to its pristine purity; and this must be very desirable, when we consider the increasing population of the west end of the city, with the addition of the new Bridewell, the filth of all which will find its way into the Schuylkill, only one square from the bason that supplies the city with water, and may soon find its way into our tea-kettles.

The docks of Philadelphia may be considered as so many immense laboratories of noxious gases. All that is necessary to remove the evil, will be to wharf so far into the river, that no part of the bottom of the dock will be left bare at low water. Wharves add to the unhealthiness of the air, by being constructed of, and partially filled up with perishable vegetable matters. They ought to be constructed of stone; but, as this will hardly be accomplished, no perishable matter should be suffered to enter into the composition of made ground on the margin of the river. Ships often annoy a whole neighbourhood by discharging putrid bilge water; they ought to be cleansed in the middle of the river, and never nearer the city, on any condition whatever.

Places of interment have long been considered dangerous to health in large cities: but they have been as carefully re-

tained as if mankind was determined to be surrounded by those sacred but poisonous relics, although pregnant with the seeds of inevitable destruction to the survivors. The remedy is simple: let the dead be interred without the city in future, and the present burying-places converted into groves of trees, which will conduce to the health and beauty of the city.

Badly cured provisions, perishable articles of commerce, and damaged goods of every description, may be disposed of without the city, until inspectors of such nuisances shall judge they may be safely admitted.

Of all the domestic manufactories, that of soap is the most exceptionable. It arises from the large quantity of half putrid animal matter collected and retained through the hot months. The fætor may be corrected by the addition of ley or soda to the raw materials, and keeping it in a deep cellar with a little ice. The offensive fluids collected in this, in distilleries, breweries, sugar-refineries, &c. may be conducted off through the sewers into the river, while the more solid offal may be carted out of town every night through the hot season. These regulations would not be oppressive to the manufacturer, at the same time they would be very comfortable to the citizens, and conducive to general health. The same measures will be necessary for preventing manure, collected about stables, from contaminating the air and water in the neighbourhood.

Street dirt, and other foul matters accumulated in large masses near the city, have a bad effect in hot weather, when the wind blows from that direction. Would it not be better for the city commissioners to contract with the neighbouring farmers to remove this manure to their farms, at the stated times

of collecting it in heaps? This would save the expence of carting to the commons. Dirty, narrow alleys, where vast numbers of poor people are crowded together in small tenements, and where the vices of civilization are found combined with all the uncleanness of savages, may be considered as so many hot-beds of pestilence, in sickly seasons. I know of but one remedy for the evil, which will be to erect comfortable barracks on the airy part of the commons, where they may be invited to reside rent free, and no longer offend the senses by their present conduct.

The walks and streets in the suburbs ought to be levelled, the curb-stones planted, and the gutters paved with brick, to enable the scavengers to keep them clean, and free from stagnant water, mud, &c.

No one of the above-enumerated causes are capable of doing much mischief singly; but it is the combination of them, that, by its steady operation on the olfactory nerves of the citizens, has almost paralyzed and rendered them insensible to the most noxious fœtors. It is this combination that assails the senses of the stranger to cities with such violence as to confound him, and excite astonishment that pestilence has not depopulated the place; and it is this combination, joined with great heat and moisture, that alone constitutes that atmosphere, in which malignant bilious fever delights, dwells, and flourishes.

These gases rise in the form of exhalations with the early heat of the day, and are precipitated by the cool evening air, to the great hazard of all persons exposed at that time. In clear, hot weather, the most danger is to be apprehended from sunrise till eight o'clock in the morning, and from sun-set till ten

in the evening; but in hot and damp weather, these gases seldom rise high, and then are very dangerous to health.

It is these noxious effluvia, joined with heat, and heavy, foggy weather, that, acting as a remote cause, predisposes the body to sickness, and only requires some indiscretion, which, by acting as an exciting cause, brings on disease.

To the above causes of predisposition to disease may be added, the bad condition of pump water in large cities. The constant use of water containing so large an admixture of foreign matter, must be pernicious and debilitating. Strangers find their stomachs and bowels very much disordered soon after drinking freely of it.

The expence incident to the execution of any plan of cleanliness like the above, may deter many people from countenancing it; but when we recollect the great number of valuable citizens that have fallen premature victims to the ravages of malignant fevers; when we recollect the expence, inconvenience, and confusion consequent on sudden flight from our homes; and when we consider the total loss of all business for the season in which that fever appears among us, I am induced to hope the attention of our citizens will be directed to their true interests, which will be some plan to correct the state of the atmosphere of our city, and thereby prevent those evils in future.

Case of Syphilis, succeeded by Symptoms of Gonorrhœa. Read before the Philadelphia Medical Lyceum. By JOHN REDMAN COXE, M. D.

FEBRUARY 4th, 1805, captain S. desired my attendance for a sore throat of a month's standing, and an ulcer on the left side of the forehead, below the hair. He had likewise a smaller one between the right hip and the lumbar region. On examining the throat, I found both tonsils considerably ulcerated, accompanied with tumefaction, redness, and pain of the palate. From their appearance, I could not doubt their syphilitic origin, in which I was confirmed by the account he gave me.

In the beginning of the preceding August, at Lisbon, he received an infection from an actress, which in a few days showed itself in form of chancre. Under the care of a physician, ptyalism was *very rapidly* induced, and the disease disappeared in time for his voyage to America. From eating too largely of fruit before he sailed, he was attacked in a few days with a violent diarrhœa, which continued three weeks, and reduced him greatly. The voyage lasted sixty-four days, and he landed about the latter end of November, without any recurrence of the syphilitic symptoms. He continued well till towards the middle of January, when he began to notice the appearance of copper-coloured blotches on his hands, arms, breast, &c. and soon after, a pimple appeared on the forehead, which rapidly increased to a sore of nearly the dimensions of a quarter of a dollar, the size at the time of my seeing it. His throat also began to pain him, but not sufficiently to excite alarm at first; so that, by the 4th of February, the ulcers there had greatly augmented, and the sore on the hip had also come on. He had no other symptoms

upon him, and had used only the common domestic gargles and dressings for his throat and ulcers.

As his bowels were bound, I ordered a dose of salts, and light broths for food, as he could not swallow solids. I then commenced a course of mercurial frictions night and morning, urging it slowly, to prevent the too rapid affection of the gums. Laudanum also was administered at bed-time, and precipitate applied to the external sores. In about a week, the sores began to assume a healthy aspect, and in three weeks were quite well. I still continued the mercury till the gums were slightly affected, and mercurial ulceration began to appear, which soon yielded to common astringent gargles. A more generous diet and port wine were ordered, as soon as he could use them, and by the beginning of March, the blotches, sores, &c. had entirely disappeared. At the time of the healing of the sores, he informed me, a running had commenced, unattended with scalding, and for which I ordered a weak saturnine injection. I was now very particular in my enquiries of him as to the origin of this last complaint; but he always assured me he had never exposed himself to the chance of infection, since that which produced the syphilitic complaint at Lisbon, in the preceding August, as, indeed, his voyage and subsequent indisposition rendered apparent. He had had a gonorrhœa eighteen months previously, but never since, and this he uniformly persisted in confirming, at every subsequent enquiry. As the running still continued, without any pain, I supposed it might probably be a gleet, and ordered balsam copavi, in considerable doses, and an injection of port wine and water, during the greatest part of March, without any cessation of the disease. About the middle of March, he began to perceive a slight scalding, and was sensible of pain on pressure, about an inch from the extremity of the urethra. I again re-

sumed the saturnine injection, and continued it a week, when great tumefaction of the prepuce occurred, with considerable disposition to phymosis. The discharge apparently was less bland. I discontinued the injection, and applied a cold saturnine poultice to the swelling, which, however, increased greatly, and the scalding became much more severe; chordee also had for some time existed, which required laudanum to check it. The swelling subsided by the commencement of April, but the discharge continued with augmented pain upon passing his urine, which, however, came away in a full stream. On the 4th, on passing a bougie, considerable pain was felt from about one to three inches up the urethra, but I saw no reason to suspect a stricture. I now, therefore, ordered an injection of a grain and a half of corrosive sublimate to eight ounces of water, to be used four or five times daily. The swelling of the prepuce had nearly subsided by the 9th, but the ardor urinæ was aggravated. As he was feverish at night, I ordered him to lose ten ounces of blood, and to take gentle laxatives. The injection was weakened to one grain to eight ounces; and a hundred and twenty drops of laudanum were added to it. He was not relieved by the bleeding; but the internal use of laudanum appeared to be most beneficial to him. The injection with corrosive sublimate was laid aside, and one employed in its place, made of the sulphate of soda poultice, as recommended by Dr. Ferguson, of Aberdeen*. This, after a week's trial, gave him but little relief. The veins of the lower extremities became very painful, and swelled considerably. Great itching of the limbs after walking. The discharge from the urethra became more watery, and the pain felt in passing urine still continued, about three inches from the extremity of the penis. Chordee continued. An injection of cold water

* See Medical and Physical Journal. Medical Museum, vol. i. p. 462.

relieved him considerably. He now complained of a small sore at the junction of the glans and frænum, for which he used a wash of corrosive sublimate. I also gave him ʒss. of nitric acid daily, partly for the complaint, as likewise to invigorate the system. The discharge continued considerable, but the scalding abated. On the 28th he was bled, with much relief, to the painful, turgid veins of the feet. The small sore on the penis appearing fistulous, I found by the probe that it ran down above half an inch by the side of the urethra. The prepuce was much enlarged at this part, especially during the after part of the day. The injection by the urethra was found to regurgitate by the fistulous canal. His strength being increased by the use of the acid, I put him again on the use of the mercurial pill, and ordered a bougie to be worn for half an hour, morning and evening, using also an injection of calomel and gum arabic. Finding a complete sinus, however, to have formed between the sore and the urethra, he used a flexible catheter to prevent the urine passing by it, but without benefit*. The pain of the legs, &c. was moderated by bitter fomentations. His general health appeared better, and I was in hopes that every untoward appearance was giving way; when he was severely bruised by the fall of a spar on board ship, which laid him up for a week or ten days, with great pain of the loins. This was at length relieved by a blister. About the first week in June, whilst still using mercury, a node appeared on the right side of the frontal bone. It was, however, relieved by stimulating frictions. His general health was so much better than it had been, that he hoped to derive much benefit from a

* Since writing the above case, I have met with another instance of a small sore forming at the frænum penis, in a case of gonorrhœa, and opening into the urethra by a sinus, about an inch from the mouth. This, however, readily healed by enlarging the external orifice, so as to give a free discharge to the matter.

West India voyage, which he accordingly undertook, as master of a vessel. He experienced much severe weather, and the syphilitic symptoms again recurred with much violence; and the last intelligence that I received of him was, that he had fallen a victim to the diseases of the climate, induced by the great vicissitudes he experienced from continued gales, &c. which rendered it necessary that he should expose himself more than his system was enabled to sustain, under the complicated effects of disease and the remedies employed.

In this case, one of two things must have occurred. Either he must have received the infection of gonorrhœa at the same time with the chancre, which did not show itself till this last disease was suspended, after arriving in America, and consequently must have lain dormant from August till March (upwards of six months); or, if the two diseases arise from one stock, it must thus have shown itself upon the cessation of the syphilitic symptoms. From its *immediate* appearance, on the cessation of these last, I am of opinion this must have been the case; as it seems scarcely probable, under every circumstance, that the gonorrhœal virus should have remained dormant so long. Why it did not break out on the cessation of chancre at Lisbon, I cannot account; but I consider it as an additional reason in favour of the joint origin of the two diseases; for, had the two diseases a different source, it is more likely that it would then have shown itself, than that it should have continued dormant for so much greater a period*.

February 3d, 1808.

* J. Hunter gives a remarkable fact of a young woman received into the Magdalen Hospital in London, and continuing there for two years. The moment she came out, she was picked up by one waiting for her with a post-

Observations on the Modus Operandi of Cold. By JOSEPH
KLAPP, M. D.

Southwark, February 23d, 1808.

DEAR SIR,

IF you should think that the following appendix to the reasoning part of my Inquiry into the Modus Operandi of Cold, lately delivered before the Philadelphia Medical Society, as an annual oration, would contribute to the elucidation and establishment of our ideas on that subject, you have my consent to include it in the next number of your Medical Museum.

Though the operation of cold is unquestionably a subject of magnitude both to the physiologist and the practitioner of medicine, and notwithstanding it has of late become extremely fashionable in our university to dispute whether it be that of a stimulant or a sedative, yet I can with sincerity affirm that no design has been entertained of provoking a fresh controversy. The subjoined experiments are thrown out only with a hope of advancing medical characters a step nearer to truth, their common desideratum.

chaise, to carry her off immediately. She gave him a gonorrhœa.—P 38, second London edition.—He supposes it to be the effect of habit, by which the parts in her had lost their susceptibility of that irritation, although she communicated the disease to another.

The same author gives us cases of gonorrhœa producing lues venerea.—See p. 16.

Perhaps sophistry may make an attempt to discard them, but correct inquiry must confirm them.

I am, Sir,

Yours, most affectionately,

JOSEPH KLAPP.

Dr. John Redman Coxe.

“Some modern writers on medicine have called cold a stimulus to animal fibres, which it always renders torpid or inactive; a theory derived from Galen, and which must have originated in his total ignorance of chemistry and natural philosophy.”

DARWIN.

WHEN the philosophic enquiries of the chemist into the nature of cold was contrasted with the speculations of the physician concerning its modus operandi, it was remarked, that the former had long since approximated truth by the guide of experiment, while the latter was still involved in controversy and doubt, in consequence of its having been, in the most of instances, left to the disposal of hypothesis and the most pliant facts. To this observation, however, the late Dr. Currie, of Liverpool, and Dr. Stock, of Bristol, must now be noticed as exceptions. They respectively instituted a series of experiments, the results of which favour opposite opinions. Dr. Currie was a warm advocate for the stimulating operation of cold; while Dr. Stock, with equal zeal, and, in my estimation, with more success, has endeavoured to establish a contrary theory. But their mode of experimenting does not appear to be altogether free from objection; at any rate it certainly cannot be considered the most decisive method of prosecuting this highly important enquiry. The persons who were the subjects of their experiments were nearly, or quite immersed, and, in some instances, plunged suddenly into cold

water, and the state of their pulse was afterwards taken, as an indication of the change of excitement which the cold produced in their systems.

It appears to me, that this method of experimenting unavoidably incurs such a degree of impression on the system from other causes, as to make it a matter of extreme difficulty to decide with certainty, on the true and separate effects which ought to be attributed to the cold. For example, the sudden change of medium from that of atmospheric air to water, must operate in some degree on the system with the force of a mechanical agent. And one would naturally suppose that those muscular exertions which were incurred in excessive shivering, and in swimming backwards and forwards, would infuse into the system, with cold, such blended effects, as to make it a question what ought to be imputed to collateral agents, and what was really produced by a mere change of temperature.

With the expectation of being able to avoid all or the most of these difficulties, I have instituted a few decisive experiments, which, with a few exceptions, were performed in a medium of air, instead of water. In this way, the living system was only liable to a variation of its excitement from a change of temperature, as unusual muscular exertions were prevented, by the subjects of the experiments walking composedly out of one room into another. It is true, that even in this most precautionary way, some tremor or shivering did occur, but not to such an extent, it is conceived, as would affect the result of the experiments.

EXPERIMENT I.

On due examination, my pulse was ascertained to afford -seventy-four pulsations per minute, and as to quickness and fulness, it was as usual. My feet and legs were then immersed in a bucket of cold water, a few degrees above the freezing point. The gentleman who gave me assistance was very cautious, and particular in noticing every change which occurred in the pulse, and the following is an exact account of his report: Two minutes after the immersion, the pulse beat sixty-three strokes the minute; three minutes, sixty-two; four minutes, sixty-two; six minutes, sixty-four; and seven minutes from the commencement of the immersion, it afforded sixty-nine pulsations per minute. As the water was now acquiring warmth, the experiment was discontinued. The pulse was observed not only to become less frequent, but it lost much of its force and fulness.

As the design of the experiment related, appeared well calculated to produce decision in the present controversy, I was induced to repeat it after Dr. Rush, and its result with me confirms the doctor's statement.

EXPERIMENT II.

My feet and legs were immersed in a tub of recent snow, which had fallen during an exceeding cold night of the month of January. On placing the bulb of Fahrenheit's thermometer in the snow, the mercury immediately descended to the freezing point. In two minutes after the beginning of the immersion, the pulse became very weak, and fell in frequency from seventy-four pulsations to fifty-eight, in a minute.

This experiment was repeated the same evening on a healthy young man, with the same result. In both instances, after the immersion had been discontinued for the compass of a few minutes, the pulse resumed something more than its usual force and frequency.

To those inferences which these experiments obviously afford, it may be replied: "even admitting it as a fact that cold does always diminish arterial action, it does not follow from thence, that it is in its nature, necessarily, and essentially, a sedative, or a debilitating agent; because digitalis and saccharum saturni, when taken internally, reduce both the force and frequency of the pulse; so also does tartar emetic; yet neither of these articles can be considered as a sedative. They are all powerful stimulants to the stomach, and reduce arterial action only by sympathy." Instead of the conclusion, of the sedative operation of cold from the fact of its directly reducing the force and frequency of the pulse, "bespeaking a partial view of things," I am most decidedly of the opinion, that this method of reasoning is perfectly consonant with every established and rational rule of judging of the *modus operandi* of medicines. To assert that saccharum saturni, digitalis, and tartar emetic reduce arterial action in the same way as cold, exposes a singular disregard to all experiment and observation. Dr. Moore, who graduated in this university some years ago, has related, in his inaugural thesis, a number of experiments, which indisputably prove that the primary effect of digitalis on the system is an acceleration of the pulse; and, from my own observation on different persons, while under the primary impression of large doses of saccharum saturni and tartar emetic, I can with confidence declare, that they both, first elevate the pulse for a few strokes, before they diminish it in fre-

quency. My experiments on these two last articles will, perhaps, ere long, be handed to the public.

If cold be a stimulus, then its general application to the animal body, comprising not only the cutaneous but the pulmonary surface, must augment muscular strength and arterial action. With the view of investigating this point, the following experiments were instituted, with such a regard to fairness and impartiality, as to induce me to challenge such as may doubt, to repeat them.

EXPERIMENT III.

The gentleman who was the subject of the last experiment, when repeated, exposed himself nearly naked to an atmosphere, which sunk the mercury in the thermometer of Fahrenheit to the freezing point. On examining his pulse, one quarter of an hour after the commencement of the experiment, it had lost much of its force and fulness, and was diminished in frequency, from seventy-six to sixty pulsations in the minute.

In reply to the various proofs which have from many quarters been obtained, of the power of a high degree of cold to diminish the force and frequency of the pulse, it has been asserted that such evidence is not conclusive, since the fact "is only true with regard to very high degrees of cold, and that a moderate degree of it invigorates the blood-vessels, muscles, and every other part of the system." This opinion is openly exposed and refuted by the succeeding experiments.

EXPERIMENT IV.

After different examinations were made by a medical assistant, my pulse was found to beat in the radial artery sixty-eight times in a minute, and usual as to force and fulness. I now walked into another room with no clothes on except my shirt, and, after being exposed to its air, of the temperature of forty degrees of Fahrenheit, for twelve minutes, the pulse afforded fifty-eight feeble strokes in a minute; in fourteen minutes, it was at fifty-six; in fifteen, fifty-six; in sixteen, fifty-four; and in seventeen minutes from the beginning of the experiment, the pulse emitted fifty-six weak strokes in the minute.

Comparative with the degrees of cold which were used in the former experiments, that of the last one may be termed moderate; but, notwithstanding this variation of temperature, it does not appear that the effects produced on the pulse are in any respect different, except in degree.

The following, however, may be deemed more to the point, and therefore more satisfactory.

EXPERIMENT V.

J. E.'s pulse, after due examination, was found to beat seventy regular and usually full strokes per minute. He then walked into another room, with no clothes on, except a loose shirt; and on the sixteenth minute of his exposure to an atmosphere of the temperature of fifty degrees of Fahrenheit, his pulse beat sixty strokes; on the eighteenth, fifty-eight; and, on the nineteenth minute, it afforded fifty-nine pulsations.

From the commencement to the end of the experiment, the pulse was sensibly diminished in force and fulness.

Feeling some degree of curiosity to ascertain what effect an exclusive application of cool air, first to the pulmonary, and then to the cuticular surface, would have on the force and velocity of the pulse, I concluded on gratifying this particular inclination by performing the two following experiments:

EXPERIMENT VI.

On examination, A. B.'s pulse was found to beat seventy-six usually full and regular pulsations the minute. Cool air, of the temperature of forty-five degrees, was respired through a long tube put through the window, while the mercury in the thermometer was at seventy degrees in the room in which the subject of the experiment stood.

On the sixteenth minute from the beginning of this process, the pulse was at seventy; on the eighteenth, it beat seventy-two strokes; and, on the nineteenth minute, seventy-two.

The volume of the pulse was evidently softer and smaller than it had been.

EXPERIMENT VII.

J. E.'s pulse yielded sixty-eight strokes in a minute, and regular. He exposed himself nearly naked to air of the temperature of thirty-five degrees of Fahrenheit, and, at the same time, breathed air through the tube, out of a room in which the quicksilver in the thermometer stood at sixty-five degrees. On the fifth minute of the exposure of J. E. the pulse beat

only fifty-eight times; on the sixth minute, fifty-nine; and, on the seventh minute, it afforded sixty strokes, the size of which was diminished, and the force of the pulse was weaker than previous to the experiment.

Thus it appears, from the foregoing experiments, that not only high and moderate degrees of cold, applied generally to the body; but when applied to the cutaneous and pulmonary surfaces separately, diminish both the force and frequency of the pulse.

Those gentlemen who gave me assistance in this practical department of my enquiry, can bear testimony to the unexceptionable description, of not only the design, but the performance of the experiments. They will, therefore, I hope, carry to every candid mind all the weight and decision which have been attached to them by those persons who were present at their performance. In short, both reason and experiment pronounce cold a debilitating agent.

Experiments and Observations on Fulminating Mercury. By
JAMES WOODHOUSE, M. D. *Professor of Chemistry in the*
University of Pennsylvania, &c.

SUPPOSING that fulminating mercury might be applied to the purposes of war, and particularly in perforating the timbers of vessels, by being applied to their bottoms, by means of the torpedoes of Mr. Fulton, I undertook a series of experiments, to find out a simple method of preparing it in large quantities.

In this I succeeded ; and the following mode of making this dreadful compound never fails, and yields a larger product than any other process, at present known :

Take two ounce measures of a saturated solution of mercury in the nitric acid, and pour it into a quart tumbler. Add to it four ounce measures of alkohol, and then two ounce measures of the best and strongest nitric acid.

Immediately an effervescence will take place, and an immense quantity of nitrous etherized gas and nitrous air will be discharged in thick white clouds, and, in about fifteen minutes, the fulminating mercury will be deposited at the bottom of the vessel, in slender crystals of a white and brilliant colour.

They must be washed by filling the tumbler twice with pure water, and then dried by a gentle heat, or by exposing them two or three days to the air. The proportion of ingredients here mentioned will yield two hundred and twenty-seven grains of this exploding preparation.

A brick-bat, weighing five pounds, was placed upon fifteen grains of this fulminating mercury, lying upon an inch plank. A train of gun-powder was made to communicate with the fulminating compound. Upon firing it, a piece of the plank, several inches in length, was torn off.

Thirty grains, fired in the same manner, split the brick in two, perforated the plank, and tore away a piece of it, five inches in length, and two in breadth.

Sixty grains, placed on a three inch plank, with two brick-bats over them, broke the bricks into a variety of pieces, scat-

tered them in every direction, and made an excavation in the plank, half an inch deep, and five in circumference.

Ninety grains, under five bricks, broke the whole into an immense number of pieces, perforated the three inch plank one inch deep, and nine in circumference.

Two hundred grains were laid upon an oak plank five feet in length, and one foot in breadth. Another plank of the same size was laid over the fulminating mercury, and confined by thirty pounds weight of bricks. Upon firing the compound, all the bricks were broken into pieces; a foot in length and breadth of the table on which the planks rested was carried away; the upper plank was thrown into the air; both were split, and small excavations made in them.

An idea of the immense force of this substance may be conceived, when it is related, that ten grains of it will burst the strongest pistol-barrel that can be made.

As it possesses a thousand times the power of gunpowder, is no ways dangerous, and can be fired by the flint and steel, it would appear to be preferable to this article to charge the torpedoes of Mr. Fulton.

Experiments and Observations on the Cooling of Water by Evaporation. By JAMES WOODHOUSE, M. D. Professor of Chemistry in the University of Pennsylvania, &c.

IT is a fact well known to philosophers, that evaporation always generates cold, and that the temperature of bodies is reduced, according to the volatility of the fluids applied to them, and to the warmth and dryness of the atmosphere.

Thus, the sulphuric ether applied to the bulb of a thermometer, will reduce the mercury many degrees below the freezing point; but, when mixed with the muriatic ether, the volatility of the two fluids is increased, and the quicksilver will descend below zero of Fahrenheit's scale.

In India, Persia, and Egypt, they make their drinking cups of a soft, porous clay, which, by suffering some of the water to transude and evaporate, cools the rest.

Russel, in his *History of Aleppo*, informs us, that the Turks cool their wine, in the summer season, by wrapping a wet cloth round the bottle which contains it, and exposing it to the rays of the sun.

Dr. Pinkard tells us, that at Barbadoes they make the wine and porter very pleasantly cool, by putting the bottles in wet cloth bags, and placing them in the open windows for some time before dinner, taking care to sprinkle them occasionally with water as they stand exposed to the breeze*.

Although the thermometer never descends to the freezing point, and ice is never discovered, at Calcutta, in the East Indies, in the pools or cisterns, or in any of the waters collected in the roads, yet, by evaporation, the inhabitants make a sufficient quantity of it in the winter for the supply of the table during the summer season†.

Travellers all agree, that water may be rendered cool by evaporation; but none of them have informed us of the exact

* *Notes on the West Indies*, vol. 1. p. 243.

† *Philosophical Transactions*, vol. 65. p. 252.

degree of temperature to which it may be reduced, by means of a thermometer, the only accurate mode of ascertaining the fact.

Witman, in his *Travels in Turkey, Asia Minor, and Syria*, speaks of its being rendered extremely cool*.

In order to find how low water could be cooled in Philadelphia, one of the vessels which the natives of India use, was procured, and two others were made exactly like it, one of our common clay, and the other of clay and charcoal, both burnt and unglazed. These vessels were filled with water of the temperature of 52° , and were kept swinging in the sun and shade, for several hours at a time, when the temperature of the atmosphere varied from 86° to 110° . The temperature of the water in all the vessels was raised from 52° to 80° and 100° , and they appeared to have no other effect than in preventing it from becoming disagreeably warm.

As evaporation is always in proportion to the warmth and dryness of the air, it can easily be conceived, that water may be cooled in Egypt by these vessels, and particularly when the kamsin or sirocco wind blows; for this air is so very warm, that it appears as if issuing from the mouth of an oven.

* Page 384, Philadelphia edition.

MEDICAL MUSEUM.

VOL. V.....NO. II.

Account of the Influenza, at Berwick, in Maine. By Dr.
RICHARD HAZLETINE.

Berwick, February, 1808.

SIR,

IF correct histories of epidemics, as they appear in remote parts of the same continent, or in different countries, are interesting to the philosopher and physician, perhaps the following account of the influenza, as it prevailed, last autumn, in the town of Berwick, in the district of Maine, will be thought entitled to some consideration. If you deem it of sufficient importance to be made public, by inserting it in your valuable Museum, you will oblige your obedient servant,

RICHARD HAZLETINE.

Dr. John Redman Coxe.

BERWICK is situated in the south-western extremity of the district of Maine, and is bounded on the west by a river, which, from its junction with the Piscataqua, two or three miles below the town, to the head of boat navigation and the swell of the tide, is known by the aboriginal name Newichwanack; thence, to the head of the town, Salmonfalls River. This river is part of the eastern boundary of New Hampshire.

Between Berwick and the sea, on the eastern side of the Piscataqua, Kittery is situated; opposite to which, on the western side of the same river, lie Newington, and Portsmouth, the capital of New Hampshire.

Berwick contains about 4000 inhabitants, who are chiefly employed in agricultural pursuits, and, of course, generally healthy. From one to four or five vessels are annually built in this place; and the vessels owned by gentlemen concerned in navigation, amount to about 400 tons. Two small packets ply daily, during the summer season, from the head of the tide-water in this town to Portsmouth, distant about a dozen miles. In the winter season, the river is frozen over, from the head of the tide to the Piscataqua.

We had a favourable proportion of wet and dry weather during the fore part of the last summer, and till the middle of July; after which, such frequent and considerable rains through the remainder of the season, and even till the middle of October, were, perhaps, never before known. It was with extreme difficulty that the farmers could make their hay: much of it was injured; and so also were English grains: the crop of flax was almost entirely spoiled. I believe half of the farmers in this town were not half done getting their hay before the middle of September; and some, of handsome property and talents, and of regular habits, were not done by the middle of October. By reason of these rains, there was a plentiful crop of hay. There were also large crops of most of the *cerealia*, of garden vegetables, pompions, and apples. From my own sensations, and the state of the mercury in my thermometer, which I at no time observed to stand above 85°, I judged the season to be uncommonly *cool* during the whole of the summer.

Some time in the fore part of August, we were informed, by the newspapers, of the prevalence of the influenza in several of the capital towns in the middle states, and that it was travelling northward. In the latter part of the same month it made its appearance in this and the neighbouring towns. So few females were attacked with the disease on its first coming among us, that it was remarked by some, that the sex were exempted from its unwelcome visitation; but it was soon evident that neither sex, nor age, nor any habit of body, might reasonably expect to escape the arbitrary domination of a power of such universal sway. The middle aged and the robust were the most frequent and severe sufferers from its attack; and a few experienced a return of the disease five or six weeks after having once passed through it.

The fever which characterized the disease was almost always a mild synocha, though, in a few instances, it was violent, and required liberal evacuations. In some it assumed the habit of a typhus mitior, and in a few degenerated into a fatal typhus gravior. The sensibility of the system was "tremblingly alive" to the force of the contagion; and the character of the disease was, in most instances, by no means insidious, but clearly developed, and put on, in cases which required confinement, and even in those which did not, a train of symptoms, which, to persons unacquainted with sickness, appeared alarming. The only daughter of a gentleman of respectability and fortune was pretty severely attacked with the disease, though, in the opinion of her physicians, without danger; yet it was almost impossible to persuade him that her sickness was not a very dangerous fever, till there were evident appearances of amendment, which happily took place in two or three days, and were finally followed with a perfect restoration to health.

The disease was most rife among us for about the space of six weeks; though a few cases were known as early as the last week in August, and as late as the 1st of November: comprehending a period of eight or ten weeks.

Perhaps hundreds of persons passed through the disease, pursuing their ordinary employments, and indulging in their ordinary habits, with no other symptoms of indisposition than a general sense of lassitude; "head stuffed up," as they expressed themselves; soreness of the trachea and bronchiæ; hoarseness; and some degree of coryza and cough; and, where it was thought proper to attend a little to these complaints, and treat them with abstemiousness, moderate exercise, and by keeping the extremities warm, and perhaps by a domestic sweat, they generally disappeared in a few days, and probably sooner than if nothing had been done: but with those who imprudently attempted to "feed a cold," and, one would think from their conduct, to drown it in ardent spirits, the above complaints continued, sometimes better, sometimes worse, for several weeks. In cases more serious, the above symptoms were accompanied with pain in the head, sides or breast, back, hips, and extremities; inappetency, nausea, and vomiting; laborious respiration; dry skin and tongue; and with a pulse increased in frequency, and commonly in force. The pain in the head was situated, in many instances, in the frontal sinuses, extending thence in a direction to the root of the nose. In a few such instances, the pain was almost intolerable; and it appeared in the course of the disease, from the discharge *per nares*, that abscesses had formed in those sinuses, and broke. In some cases, moving the eyes was attended with pain. Some persons complained of a pain in the ears; more, in the face and jaws, from decayed teeth. The pain in the side was, in many cases, in the region of the liver; and, in some, extended to the right shoulder; but it

was more frequent in the opposite side and shoulder. Some persons declared, that they *felt the pain in almost every bone of the body and limbs, even to their fingers' ends*: such cases were commonly mild in other respects, and only of a day or two's continuance. In a few cases, the disease seemed exclusively confined to the head and respiratory organs, and was characterized by most of the circumstances of apyrexia: such as want of heat, paleness, moderate pulse, debility, &c. Many persons complained of sore throat, and, in a few, the tonsillary glands inflamed, suppurated, and broke.

In one instance, after the formation and rupture of an abscess in the throat, a complete *aphonia* continued a week or two, and at length yielded to the *alterative* power of the *pilula à hydrargyro*, Pharm. Ed. and the frequent use of spermaceti in molasses or honey. In one instance, which I saw, the appearance of the throat was precisely similar to that which is commonly observed in the *scarlatina anginosa*; in another, the patient, who laboured under very little fever, complained of a pricking sensation in his mouth and on his tongue, as if he had been chewing the root of the *arum maculatum*. Another person complained of a burning sensation in his mouth, similar to that, he said, which arises from eating pepper. I saw one person who complained of no symptom of indisposition but a sore mouth and throat, and a constant salivation. He said his throat felt sore, at times, as if he had swallowed something that injured the passage; and he spat as freely as a person under a copious ptyalism from the use of mercury. He had taken no medicine whatever, nor any thing unusual for food or drink.

An angry eruption on the lips was noticed in many persons. Sore eyes were frequently complained of during the violence

of the disease, and, in some instances, a long time after it had subsided. A remarkable suffusion of face was observed in most cases of considerable severity; and in several such cases, at the height of the disease, there was a small discharge of blood from the nose.

A mild hæmoptysis was often noticed in the more violent cases of pulmonary affection. In one young lady, in whom the *catamenia* were regularly established, a recurrence of that important sexual evacuation came on in the height of the disease, in a fortnight after she had experienced a customary visitation; and this, I believe, was not a solitary instance of the kind.

Mild delirium was not an unfrequent symptom in the height of the disease, and sometimes it was observed at the onset. In a few instances, the commencement was marked by violent delirium of short duration. One person told me he felt "just as he did when he had the measles, only he had no breaking out." In several instances I noticed a remarkable disrelish for an infusion of either the black or green teas. One person within my knowledge, labouring under a chronical arthritic state of fever, escaped the disease, or was hardly sensible of an attack from it.

In most cases, under proper management, the disease came on and went off within the space of a week; and it was surprising to see what commotion the contagion would excite in the system, and yet pass off in a few days as certainly, yet gently "as the morning cloud and early dew." The crisis was constantly marked with some degree of increased perspiration, either spontaneous or artificial, and in a few cases with profuse sweat.

As yet, we have reason to believe it will have proved the exciting cause of but few cases of phthisis pulmonalis: and that is much to be wondered at, considering it as a disease which produces such disturbance in the pulmonary organs.

It must be deemed an acquisition of no trifling consequence to the interests of medicine and humanity, if it could be ascertained whether the principle of contagion is a sedative or a stimulant, with respect to the living system of animals; for the discovery of this important fact would probably afford a clue which would lead to the knowledge of the means of preventing contagious diseases; but, in my opinion, the subject must yet be considered *sub lite*. And while the history of the phenomena of contagion is so incomplete, and the facts respecting it, which are known, seem so contradictory, it will remain no easy matter for one who cannot boast of more than a mediocrity of talents, or is not unduly influenced by the awe of great names, to decide on which side of the controversy to enlist; and while it is also believed that the doctrine maintained by "the venerable Cullen," First Lines, sections 36 and 86, independent of the preponderating influence of his authority, is, perhaps, by no means untenable, nor destitute of very respectable support; it must at the same time be admitted, that a different doctrine will hardly fail to gain our assent, when it is advocated by men of such exalted talents as the late Dr. Darwin, and our illustrious countryman, Dr. Rush.

This digression was introduced merely with a view to observe, that I never knew any attempt made to prevent an attack of the influenza.

The medicines which I employed in this disease were, 1st, cathartics. In most instances I found it necessary to eva-

cuates the intestinal canal by one dose of rhubarb and calomel, or by rhubarb and a few grains of pearl-ash, or by a pill of calomel, *è gr. 4 ad 10*, followed with an infusion of senna, manna, and coriander seeds, or with an infusion of senna, sem. cor. and sulph. sodæ, or by the last article alone; or by a dose of jalap, calomel, and nitre, with or without a few grains of gamboge; but I generally found the *eccoproctica*, assisted by mild *enemata*, best. Some of these cathartic medicines were repeated once or twice, according to the degree of the fever, and the state of the intestines, or according to the pain complained of.

Next in frequency were, 2dly, medicines given with a view to the pulmonary complaints: such were balsam of copaiva, lac ammoniac, spermaceti, antimonial wine alone, or, in cases of moderate or feeble vascular excitement, combined with an equal quantity of tincture of opium; the root and extract of liquorice; and a pill composed of opium, ext. glyc.—gum. am.—soap, and bals. copaiba. The antimonial wine, or some other antimonial medicine, was given frequently in the twenty-four hours, where the fever was considerable; but the opiates, for the most, were given in the evening, *hora somni*.

3dly. Epispastics were applied to the sides or breast, in cases of bad cough, or of pain in those parts; and to the arms or nape of the neck, in head-ach, tooth-ach, ear-ach, or sore eyes, or in cases of delirium.

4thly. I let blood in a few instances; but there were not many persons who required this operation.

5thly. I gave the tartrate of antimony alone, to produce full vomiting in a few persons; but to more, I gave the same me-

dicine with ipecacuanha. It was rarely necessary to repeat the vomiting.

Lastly: Various applications were made to the feet, in order to excite revulsion from the head and nobler parts, such as pediluvia, sinapisms, bruised garlic, burdock-leaves wet with vinegar, jugs of warm water, &c. I directed teas of ground-ivy (*hedera terrestris*), flaxseed and hyssop, elder-flowers, low balm, &c. and, in cases of debility, an infusion of chamomile-flowers was found very useful. From some opportunity which I had of witnessing the effects of an infusion of the hedge-hyssop (*gratiola*), I was led to think very favourably of it as a powerful promoter of the excretions. Mild demulcent steams were frequently inhaled into the lungs in some cases, and with advantage. There were a few cases which required the united powers of opium and calomel in such doses, as for the latter gently to affect the salivary glands, to obviate a degree of debility which threatened a fatal termination of the disease.

Remarks on a Case reported in Mr. Hey's Surgery; and on Hemorrhage. By Dr. HORATIO G. JAMESON.

Gettysburg, January 27, 1808.

DEAR SIR,

YOU may give the following remarks a place in your Museum, if you think proper.

I am, with esteem, yours, &c.

HORATIO G. JAMESON.

Dr. John Redman Coxe.

VOL. V.

L

WILLIAM HEY, Esq. has given a case of a "wound of the posterior tibial artery*." With due deference to this highly respectable author, I beg leave to suggest, that I believe that very painful operation might have been avoided. If the operation was absolutely necessary, the indication was an ingenious one, and the saw used a very fit instrument.

In the course of my practice, I have seen nature perform wonders in staying hemorrhages. I have seen the temporal artery, divided transversely, cease bleeding on applying a gentle pressure. I have seen considerable arteries of the hands and feet divided, and their bleeding stopped by a proper bandage. Divided arteries of the fingers and toes will always cease bleeding, in healthy bodies, when secured by bandage.

Mrs. Zane, a respectable lady at Wheeling, Virginia, related a case to me some years ago: I recollect the substance of the case, but do not remember every particular. A mortification occurred in the foot of a child; there was no physician or surgeon in the neighbourhood; Mrs. Zane applied some remedies, with the humane intention of lessening the little sufferer's pain. Nature in a few days decided, that just above the ankle was the line on which the disease was to be repelled. A separation progressed, and in a few days the foot was cast off, except one or two tendons, which the good lady divided. No hemorrhage occurred; the child recovered.

* Page 27, American edition. With all due deference to Dr. J.'s professional skill, the Editor cannot but think, from a careful perusal of the case alluded to, that Mr. Hey is entitled to the highest praise, for the very ingenious plan he pursued; by which, in all probability, the limb, if not the life, of the patient was preserved, as it appears impossible that any bandage or styptic could have been successfully employed.

The Medical Museum furnishes several valuable facts respecting hemorrhages: I will concisely mention them. Vol. II. p. 163, Dr. Mease gives the case of a profuse bleeding, from a wound in the ankle. Mr. William Bartram stopped the bleeding, by applying crow-foot roots. Vol. III. p. 154, Dr. Mease relates a case of the artery at the wrist being wounded, and an aneurismatic tumour formed. Dr. Hendry checked the bleeding, by applying the same remedy. In another case, a large wound, in which a considerable artery was divided, ceased bleeding as soon as the crow-foot was applied. Vol. IV. p. 20, Dr. Vancleve relates a case of a division of the axillary artery (of a boy), where no styptic or ligature was applied, and where a hemorrhage happened the fourteenth day after the accident, and yet the artery healed. I do not suppose such cases would always end thus favourably; but they ought to make surgeons very cautious how they operate. Mr. Cheselden also gives the case of Samuel Wood, who had his arm torn off and healed, without a hemorrhage happening. In the case related by Mr. Hey, the bleeding ceased about a week the first time, and the operation was performed on the sixteenth day. No mention is made of the artery's being diseased; nor have we any evidence of the patient's being kept in a suitable manner, for keeping off the bleeding. If the patient had been kept inactive, cool, and low, with proper bandage applied to his leg, I do believe the operation might have been avoided. I think, so long as the blood did not diffuse itself amongst the muscles, the operation was not absolutely necessary. A roller, where practicable, applied some distance above and below the wound, with a piece of wet bladder immediately over the bleeding orifice, would be useful; or, perhaps, some styptic would assist the cure. As *geranium maculatum* has been given internally, and applied outwardly to large wounds, with-

out any notice being taken of its having caused pain, I presume it might be introduced into deep wounds.

It is with great diffidence I offer these remarks on so respectable an author as Mr. Hey; but the above cases have made so strong an impression on my mind, I hope I shall be excused; for I must acknowledge that, when I first read this case, I was much pleased with the ingenious thought of removing part of the tibia; and, lest others might act under similar circumstances, I have ventured to offer these crude remarks.

The following extracts, taken from a letter from a British physician, now a prisoner at Verdun, in France, to DR. RUSH, of this city, contain a number of interesting FACTS, which the Editor hopes will be acceptable to his medical readers,

Verdun, November 26, 1807.

DEAR SIR,

ALTHOUGH the English prisoners seldom exceed a thousand in this place, there are about forty English medical men; and, as several practise a good deal among the lower orders of the inhabitants, the field for observation is tolerable. Intermittent and continued fevers are very common, and the former are frequently succeeded by dropsy. Fowler's mineral solution, from fifteen to forty drops daily, has been very often used with astonishing success in intermittents, when other remedies have failed. It sometimes, though rarely, excites nausea, and very seldom temporary tremors, and then only when given in too large doses. It seems the most powerful tonic hitherto known. In a case of periodical asthma it prevented the paroxysms when ether and opium, &c. failed. A

physician here has used it with advantage in the latter stages of typhus. In several cases of very obstinate and long-continued diseases of the skin, resisting the internal and external use of mercury, and other usual remedies, its internal use has proved completely successful. It has also been used with success in a case of palpitation of the heart.

This patient is much debilitated, and has been long subject to rheumatic, or perhaps to a combination of rheumatic and venereal pains almost all over the whole body. These pains, and likewise the palpitation of the heart, have repeatedly yielded to mercury, but have always returned soon afterwards. He took Fowler's solution for six weeks, which cured the palpitation of the heart; but, during that period, the pains rather increased: on which account he has been for some weeks past taking mercury, and has experienced much relief. Might it not be advisable to try the effects of the mineral solution in hysteria, and other convulsive diseases, after removing unusual plethora?

A solution of arsenic in water is frequently used here in itch. Two or three general ablutions, at intervals of two or three days, radically cure the disease.

In cases of irritability of the stomach, whether accompanied with fever or not, the *vin de Champagne Mousseux* has been administered with the greatest possible success, either alone or mixed with Seltzer-water. The Champagne was first prescribed by Dr. Allen, of the navy, in a bad case of fever, attended with frequent and violent vomiting. The Champagne immediately excited a sensation of heat in the stomach, and a general copious perspiration soon broke out. For some time afterwards, when the Champagne was omitted, the vomiting returned, and was constantly checked by the Champagne.

As both Champagne and Seltzer-water contain a great deal of carbonic acid, is it not extremely probable that brisk cyder, perry, or beer might be exhibited with great advantage in the yellow fever, and other diseases attended with vomiting. I remember an officer of the 60th regiment told me, that he was very ill of the yellow fever at Tobago, and was given over by the medical men. He then, without their knowledge, drank at least six bottles of brisk porter in twenty-four hours, to which he ascribed his recovery. It would seem that carbonic acid cures the chronic inflammation of the internal coat of the stomach.

A number of slight dropsical cases have readily yielded to cream of tartar, or to equal quantities of cream and soluble tartar mixed in solution. It has sometimes happened, when these medicines have not succeeded, that, after the introduction of mercury into the system at the same time, the dropsy has soon disappeared.

An officer of the navy, about three years since, was seized with a copious vomiting of blood, after having taken an emetic. This disorder generally recurred at intervals of two or three months, and was also generally succeeded by purging of grumous blood. At length he has been attacked by ascites and œdema of the lower extremities, and since then the hemorrhage has not recurred. He took cream of tartar for several weeks, without relief. Mercurial frictions being superadded, the dropsy soon in a great measure disappeared. When the remedies are omitted, the disease soon gains ground. He is now extremely weak, and probably will not live long. An incurable disease of the liver is probably the cause of all his complaints, &c.

Digitalis has been given here with advantage in the incipient stage of phthisis. It has generally been our object to reduce the pulse to its natural standard, and not lower. This powerful agent has been also exhibited with benefit in the secondary stages of measles, and in one case of peripneumonia notha, in which last the pulse was extremely frequent and weak.

Decoctions of *ipecacuanha*, given in clysters, either with or without laudanum, have been very useful in complaints of the bowels, even in very young children. Other remedies have generally been given at the same time, such as castor oil, soluble tartar, watery infusions, syrup or tincture of rhubarb, &c. In piles, and in one case of incipient scirrhus of the rectum, *ipecacuanha* injections have produced the happiest effect.

In several cases of obstinate inflammation of the eyes, compresses, well moistened with ardent spirits, strongly impregnated with camphor, or brandy, or vinegar alone, applied over the eyes, and frequently renewed, have effected cures when all remedies commonly recommended were unsuccessful. It seems that the constant application of the vapours of these volatile substances to the eyes, dispels the inflammation without occasioning much pain.

A young man, on falling from a horse, about two years and a half ago, in the street, was found immediately insensible, and blood issued from his nose and one of his ears. The pupils were dilated, vomiting soon occurred, and his pulse was forty-eight in a minute. On examination, no depression of the cranium was discovered. He was ordered considerable quantities of calomel and purgative glysters, and had a large blister applied to his head. The pulse and other symptoms remained nearly in the same condition for two weeks, and the

patient was considered as irrecoverable. During this period the antiphlogistic regimen was rigidly adopted. At length a mixture with laudanum and spiritus mindereri was ordered with wine and nourishing food. He soon afterwards recovered perfectly, and still continues in good health.

A stout, healthy young medical man poisoned himself on purpose with laudanum. He was found dead in bed. The contents of the stomach had a very strong odour of laudanum, but no appearance whatever of inflammation. The trachea and air-vessels of the lungs were completely filled with frothy blood, and some blood issued from the mouth. Nothing else preternatural. A friend of mine, some years since, dissected a child accidentally poisoned by laudanum. An effusion of blood within the cranium was the immediate cause of death. Hence it seems that very large doses of opium cause death, by suddenly augmenting very much the vigour of the circulation, and thereby rupturing the weaker vessels, &c.

A French soldier, whose axillary artery was wounded with a sword, recovered perfectly without any operation, except having the subclavian artery compressed for a considerable length of time, and compresses applied to the wound. I was not eye-witness to this case; however, as I know the French surgeon intimately who performed the cure, and as likewise an English medical man of my acquaintance was eye-witness, the fact cannot be doubted. Hemorrhages occurred repeatedly, and were always stopped by augmenting the compression of the subclavian artery. Hence it appears to me more than probable, that when the brachial artery is wounded in blood-letting, that by compressing the artery a small distance above the wound for several days, without at the same time impeding the circulation in the collateral branches, the wound in the artery would

heal. If so, a very painful operation might be prevented. I have invented an instrument for that purpose, and likewise have attempted to improve and invent several others, some of which I think may be of real service. But, as it is difficult to describe instruments without drawings, I shall defer giving you an account of them until some future period, when I hope to be in the United States.

THOMAS CLARKE.

The following letter from Dr. Darlington to Dr. Rush is happily calculated to show the importance of physicians governing their practice in acute diseases, by the previous habits of their patients, and more especially by a regard to the influence which a habitual climate has in forming the character of their diseases.

Observations on Diseases in an East-India Voyage, &c. By
WILLIAM DARLINGTON, M. D.

West Chester (P.), January 25, 1808.

DEAR SIR,

DURING the course of the last year, I had an opportunity of observing how extensive was the application of your medical theory, and had the satisfaction to find that the practice which was regulated by it, was equally successful in the torrid as in the temperate zone. I sailed for India in October, 1806, and arrived at Calcutta in the beginning of March following. We had no disease of consequence on board until we reached the bay of Bengal; when our cook, a stout, robust black man, a native of the West Indies, was seized with a vio-

lent attack of bilious fever; his pulse synochus, tongue much furred, eyes yellow, and an acute pain in his head and back. I did not hesitate to adopt the antiphlogistic plan of treatment extensively: he was bled three times, early in the disease, took neutral salts and antimonials freely, and, when the morbid action was sufficiently reduced, was blistered. The result was a speedy and complete cure.

Our ship lay in the river Hoogly, opposite Calcutta, during the months of March and April, 1807; the weather was extremely hot, and the constitution of the atmosphere was such, that it produced a lassitude, and indisposition to every kind of exertion, which we all agreed we had never experienced in the temperate latitudes; although the actual height of the thermometer has often been as great at Philadelphia, as it was during our stay there. The usual range of the mercury was about 84° in the morning, 96° at noon, and 90° in the evening, by Fahrenheit's scale.

The sailors were necessarily much exposed to the intense heat of the climate in doing their duty in port, and occasionally assisted its enervating influence by a frolic on shore. Several of them were attacked with dysentery, and slight fevers; but an early treatment prevented any of those cases from becoming serious.

After we had been in port about a month, one of the sailors, a young man, born in New England, was seized with a severe rheumatic affection of his knees, ankles, and arms; and his legs very soon swelled, and were so painful as to prevent him from walking, or scarcely moving. He told me he had been confined with precisely similar symptoms for three months, in the Pennsylvania hospital, the summer before; and was much

alarmed on the present attack. His pulse was active, and somewhat tense, and tongue furred, with thirst, &c.

I commenced my treatment of him by bleeding, and other depleting remedies, which were suggested by the existing symptoms; but it was a case not to be subdued by half-way measures; and I must confess the authors I had read on the diseases of those regions, and the conversations I had had with some physicians of that city, made me timid with respect to the use of the lancet.

The practitioners with whom I conversed at Calcutta condemned the lancet in the most unqualified manner; except, as one of them remarked, "in cases of hepatitis and plethora." Though their reasons on this head did not convince me of their entire correctness, yet I was disposed to be cautious; and, accordingly, after one bleeding and a cathartic, I resorted to febrifuge draughts, diaphoretics, blisters, &c. These were continued for a few days without the least benefit. The morbid action was too great for their puny forces to take effect.

My patient became much disheartened, and myself a little disconcerted. I determined to be regulated in future by the state of the system; and, instead of being trammelled by the authority of nosologists, to pursue the advice of *Celsus*, where he says "*Oportet itaque, ubi aliquid non respondet, non tanti putare auctorem quanti ægrum.*" I unsheathed the lancet again, and bled him twice a day, and repeatedly, until the symptoms were subdued. The antimonial powder was used as a febrifuge; and, after the inflammation and pain were abated by blood-letting, a second trial of blisters produced the happiest effect. So completely was the disease vanquished by this

mode of treatment, that in two weeks from the adoption of it he was about, at duty again, and continued free from all complaint during the remainder of the voyage, and through all the vicissitudes of climate and weather which afterwards occurred.

Other cases of fever afterwards appeared which required the use of the lancet, and it was always used *pro re nata*, without any of those dreaded consequences of typhus, which seem to make the physicians of that country so fearful of bleeding. I can readily believe that an implicit disciple of nosology, who was regulated, in bleeding, by the size of the bason instead of the action of the pulse, might frequently do much mischief, and prostrate the system below the point of recovery; but in all cases of acute disease, attended with a preternatural activity of pulse, depletion of some kind, by the bowels or skin, is used, even by those who condemn blood-letting altogether.

Why should blood-letting be more necessarily fatal than the other modes of depletion? Surely the excitement can be reduced with more precision by the lancet than by any medicine given internally. It is true, there are many cases of disease in which the loss of twenty ounces of blood would sink the patient into a fatal state of debility; but it is equally true that *one* ounce taken would have little or no effect; of course there is a just medium, or proportion, between the two, which, if hit upon, would accelerate the recovery of the patient. To ascertain this, we have the aid of the pulse, and other symptoms; and can as certainly, I think, arrive at the just reduction of excitement in this way, as any other.

No doubt the residents in hot climates require a cautious use of the lancet, even in the most acute diseases; but a cautious use does not amount to an absolute prohibition. There is a *just*

extent to which it may be carried in every climate, and farther than that would be pernicious in any one*. The use of the efficient remedy, in its most *due proportion*, is the perfection of medical practice, and is equally applicable in all parts of the world.

By the use of the lancet when the symptoms called for it, without regard to the dogmatical restriction of authorities, I believe the lives of one or two of our people were saved, and the convalescence of several others accelerated. When we put to sea, on our return, the diseases of the port soon vanished; and by the humane and enlightened attention of the commander, captain Donnalldson, to the comforts and welfare of his crew, no cases occurred but what were readily manageable by gentle remedies. I had the satisfaction of bringing home every man who sailed with us from Philadelphia.

I beg your pardon for this tedious (and, to you, superfluous) detail of facts and observations respecting the propriety of attending to, and being governed by, the state of the system in the practice of medicine, in all climates; and am, dear sir,

With great respect,

Your most obedient humble servant,

WILLIAM DARLINGTON.

Benjamin Rush, M. D. &c.

* The native Bengalese themselves are so far from prohibiting blood-letting, that I observed it to be a very common practice among them, in cases of fever and local pains, to draw small quantities of blood by cupping, and by punctures between the fingers, under the chin, and on other parts. Though this may appear a trifling mode of depletion compared with the copious evacuations used with us, yet it may have a proportionate effect on their effeminate systems; and shows, at least, that *some* blood may be taken without producing typhus.

*Observations on, and Objections to, the Sedative Agency of Cold.**By — —.*

MR. EDITOR,

AN ingenious writer, in your last number, has published, what he pronounces “decisive experiments,” in proof of the sedative agency of cold. There appear, however, some difficulties in the doctrine, which I shall take the liberty very respectfully to state, and as soon as they shall be removed, I promise most cordially to embrace the opinion.

I. Dr. Cullen considers stimuli as “powers exciting the motion of the living principle, whether producing sensation, or as “producing the action of moving fibres*.” This definition has never been exploded, and yet cold is found to excite both motion and sensation. Is the definition erroneous, or is cold a stimulus?

II. One of the first effects of cold is paleness of the skin and cutis anserina. In the scrotum a remarkable contraction is produced. Here is “action of the moving fibre” propagated, like other impressions, by sympathy. The same effects result from certain sounds, as that which is heard in filing the teeth of a saw. Ideas of the mind often excite cutis anserina. *Are these sedatives?*

III. Shivering, in which your correspondent asserts that “muscular exertion” is incurred, results uniformly from exposure to cold, and also by the action of other causes. A hot or a cold bath, or even immersion of the feet into hot or cold wa-

* Mat. Med. vol. II. chap. v.

ter, equally and instantly produce it*. *When two causes produce precisely the same effect, is it not perfectly just to conclude that both act in the same way, and therefore that both are stimulants, or both sedatives?*

IV. Dr. Currie, in numerous experiments, found that the pulse of a person exposed to cold was diminished from eighty-five to sixty-five strokes per minute, becoming "firm, regular, and small." Dr. Stock found that it uniformly increased in frequency, and diminished in force. These experiments we must suppose to have been fairly conducted, and so were those of your correspondent (although he could not succeed in exposing a person to great degrees of cold, without producing shivering and "muscular exertion"). Of effects so opposite, one, at least, must be a stimulant effect. *Does not this prove that cold can stimulate?*

V. If these effects resulted from "the muscular exertions which were incurred in excessive shivering," what excited these muscular exertions? *Can a sedative produce muscular exertions?*

VI. Antimoniated tartrite of potass. sp. nitr. dulc. and warm water, taken into the stomach, excite sweating. So does a draught of cold water. *Are these stimuli or sedatives†?*

* Galen made the remark, and every observer confirms it. Now, even if Galen were totally ignorant of "chemistry and natural philosophy," he could distinguish action from "inactivity," as well as the author of *Zoonomia*. "Difficile est, non satiram scribere!" Juv.

† "The effects of cold, as a stimulus, are on no occasion more remarkable, than when any substance is taken into the stomach, of such a temperature as to feel

VII. In asphyxia, the most violent stimuli are necessary to excite action ; coals of fire, electricity, and many others have been used. One of the most successful remedies is cold water, particularly in asphyxia from fixed air. In syncope cold water is almost exclusively relied on. *Can a sedative excite suspended vital action ?*

VIII. A moderate degree of cold produces exhilaration ; an increased degree, thirst, delirium, sleep, and death*. Opium, according to its dose, produces precisely similar effects. *How do they differ in their modus operandi ?*

IX. Cold applications excite absorption. Witness the practice of surgeons in the treatment of ecchymosis and other effusions. Friction, mercury, and other irritants are also used for the same purpose. *Do not all these stimulate the absorbents ?*

X. Cold stops hemorrhage. A cold application to a bleeding artery excites it to contraction, or even if the artery is at a distance the effect is produced. Thus a cold key or a lump of ice to the neck or scrotum relieves epistaxis. *All other styptics are confessed to be stimuli, why is not cold ?*

From what has been said, and from an impartial review of the effects of cold, we shall find that there are as many proofs of its stimulant operation as of that of perhaps any other agent. Light merely stimulates the eye ; sound the ear ; sugar the

cold there ; it commonly produces a sensation of heat on the body, and a disposition to sweat." First Lines of Practice of Physick (xc. 2.)

* For the facts on which this assertion is founded, see Rees's Cyclopædia, Art. Cold.

tongue ; none of these increase the force of circulation, yet no one denies that these are stimuli. The pulse, if a test, is not the only test of stimulant agency. ONE SINGLE FIBRE OF THE WHOLE ANIMATED MACHINE SET IN MOTION, PROVES A CAUSE OF THAT MOTION TO EXIST; THE EXCITING CAUSE OF VITAL MOTION IS STIMULUS.

By the application of cold, almost every organ is excited: the arteries, the nerves, the absorbents, the skin, the stomach, the intestines, the bladder, all are *excited* by cold.

I take the liberty, in concluding this very hasty production, to request, that, if it should be honoured with a reply, theory and speculation may not be considered as fact, and that the jargon of medical phraseology may not exclude the strict accuracy of logical reasoning.

I offer the homage of my highest respect to the ingenuity of that man who shall prove, 1st, That Cullen's definition of stimulus is correct ; and, 2nd, That cold is a sedative.

ARBUTHNOT.

History and Dissection of two Cases of Diseased Heart and Lungs. By WILLIAM BALDWIN, M. D. In a Letter to the EDITOR.

Wilmington (D.), April 29, 1808.

SIR,

ABOUT six o'clock on the morning of the 20th instant, two negro men died suddenly in this borough, from which circumstance, the symptoms of their previous indisposition, and cotemporaneous exit, curiosity was excited in the highest degree to account for the cause. And what greatly

augmented this curiosity, and afforded infinite surprise to many, these unfortunate men, who were to be so hastily summoned to eternity, had spent the preceding evening together, and had mutually congratulated each other on the return of such a degree of health as enabled them to attend to their respective employments.

Samuel Johnson, one of these unfortunate men, was apparently about forty-five years of age, short of stature, but every way well formed, except, perhaps, the capacity of his thorax was contracted rather below the medium size. He was a native of Maryland, but had resided in this place eight or nine years, and pursued the occupation of a day labourer. About five years ago he had the misfortune to contract a venereal complaint, which proved extremely obstinate, subjecting him to long confinement, and the mercurial disease; since which time he has not enjoyed a perfect state of health*.

About a year after this he was admitted into the poor-house, with violent chronic rheumatism, for which he obtained some relief, and after his discharge he went two voyages to the West Indies in the capacity of cook or steward. In one of these voyages his feet became considerably injured by the frost, on his return in the winter season to the coast of America.

The rheumatism still continued to afflict him, more particularly in his ankles. During the late winter he was unable to labour, and subsisted upon the charity of one of his friends, a man of colour, in whose house he resided. About Christmas

* Before the attack of venereal he enjoyed a vigorous state of health, and was qualified for any laborious employment.

he was attacked with a pain in his left side, which the medical gentleman who attended him supposed to be rheumatism, from his suffering at the same time still greater pain in his ankles.

The volatile tincture of gum guaiacum, and calomel combined with tartar emetic, was at this time prescribed, but without producing any sensible effect. He continued for several days in a kind of stupor, during which time he took but little medicine. He has since been seen occasionally by the same gentleman, and still complained principally of the pain in his ankles.

About three or four weeks ago, he again complained of a pain in his breast or side, accompanied also with a pain in his head; and he occasionally appeared in a kind of lethargic state, feeling weak and fainty, which was attributed to "*low spirits*." His pulse, as far as it was attended to, was uniformly regular, and never manifested a sufficient degree of tension to indicate the propriety of blood-letting.

As the spring season progressed, he began to acquire a better state of health, and a few days before his death he amused himself by moderate labour in a garden. The whole of the day preceding his exit, he was employed in making post and rail fence. In the evening he did not even complain of fatigue, and ate a hearty supper of more solid food than usual. A little before six o'clock on the following morning he arose, without making any complaint, with a determination to pursue his labour, and, as had been his practice, lighted his pipe, observing, "*that, with the blessing of the Lord, he would take a smoke before he went out*." Immediately after uttering these words he made a groan, fell with the pipe in his mouth, and in a few minutes expired.

DISSECTION.

The body was examined on the afternoon of the 21st, about thirty-six hours after death, in the presence of Dr. Martin and several other medical gentlemen. Upon laying open the thorax, the following morbid phenomena were presented to our view.

The pleura adhered universally to the lungs, and so firm was the adhesion that it was almost impossible to effect a separation without a laceration. The lungs were of a darker colour than natural, and both lobes contained a number of tubercles of a large size, none of which showed any tendency to supuration. From the surface of the right lobe we extracted a number of small calculi, from the size of a grain of sand to that of a grain of shot. The largest of these stony concretions was found detached in the cavity, and enclosed in a hard case-ment of coagulated blood. It was about the size, and very much resembled in form, a small kidney bean. The heart exhibited still more extraordinary marks of disease. The pericardium was closely attached to it throughout its whole extent, and there was no space left for a particle of fluid to assist the functions of this vital organ. The left ventricle contained an enormous abscess, which was situated near the base, and measured upwards of three inches through its centre into the cavity of the ventricle, containing a large collection of good pus. There was no appearance of a rupture externally or internally; the cavity of the ventricle had a natural appearance, and was but little or not at all contracted. The auricles and the right ventricle exhibited no particular marks of disease. The stomach was nearly empty, and exhibited only a few small circumscribed, dark-coloured spots, having the appear-

ance of extravasated blood. The liver, spleen, and pancreas, also, had a healthy appearance, and circumstances would not admit of a further examination.

After witnessing such a state of disorder among the thoracic viscera, we might well be astonished at the protraction of life, although we could not ascertain the immediate cause of death*. From the history of this case, we seem to be led involuntarily to admit of the distinction which professor Rush has made between *disease* and *disorder*, and that the *one*, attended with universal morbid action, will speedily, unless arrested, prostrate the powers of life without committing much apparent depredation upon the vital organs; while the *other* insiduously undermines them, and almost imperceptibly commits the most horrid ravages. That little pain should be felt in inflammation of the heart and lungs, is not to be wondered at, as it appears that neither possess much sensibility; but from the *disordered* state in which both were found, and from the irritability with which it is said they are both possessed, we might have calculated upon a train of symptoms very different from those which accompanied the present case, such as an irregular morbid pulse, cough, and dyspnœa, neither of which occurred, nor was the patient at all emaciated.

I must not forget to mention, that, although he was in every other respect temperate, since his confinement in the poor-house, he has been in the practice of taking opium, which was then prescribed to relieve his pain. As near as I can ascertain, he was in the practice of taking about two drachms a week of this narcotic, during the winter. Whether this will account in any way for the disordered state of the viscera, and the attendant

* Perhaps it was from a sudden spasmodic contraction of this irritable organ.

symptoms, I shall not pretend to determine, but it doubtless had a tendency to render him less sensible of pain, and may account for the lethargy he sometimes felt when not under its immediate influence.

Affections of the heart, and particularly abscesses, have been very rarely met with, and the symptoms attending them not always perhaps sufficiently attended to. From the insidious nature of the case before us, it becomes of the highest importance to endeavour to establish a correct pathology, that shall point out the nature, extent, and danger of such hidden *disorders*, and it is much to be regretted that dissections are still too seldom permitted. Is it not probable that many of the cases of sudden death that have occurred, and which for want of examination have been attributed to other causes, may have originated from secret affections of the heart or lungs? But it is not my wish to hazard conjectures: having stated the facts as well as I could, I submit them to your readers to comment upon, should they be deemed worthy of a place in your Museum.

For many of the most interesting particulars of the other case, I am indebted to my obliging friend, Dr. Munro.

Robert Anderson, a servant man, about thirty years of age, was of a middling size, well formed, and remarkable for temperance and sobriety. He had been brought up on a farm, but was employed during the last winter in a brew-house. Prior to the month of December his health had been uninterrupted, but since that time he has sometimes complained of a pain in his breast, attended with faintiness, for which his friends advised him to take spirits, supposing his complaint to be nervous, from the state of health which his appearance manifested.

About one or two o'clock, on the afternoon of the 15th instant, without any particular previous indisposition, he was attacked with faintiness, so as to oblige him to lie down. A physician being called in, he complained of pain on the right side of the sternum, near the clavicle, appeared pale in his face, and had a dewy sweat over his skin. He lay for some time in great apparent agony, rolling about, and extending his arms. His pulse not indicating tension, frequency, or fulness, he was bled only to the amount of eight or ten ounces. The pulse not rising, further bleeding was thought inadmissible. An emetic was given, during the operation of which he complained of cramp in his stomach. Some calomel and opium was then administered, after which he rested well.

16th. Symptoms very much relieved, and the fever moderate; a cathartic was directed, and a dose of calomel was exhibited at bed-time.

17th. Symptoms still more favourable.

From this time till the morning of his death he was considered convalescent, and was able to attend to business. He, however, still complained of some oppression in his breast, pain in his head, and inclined to be sleepy. On the 19th these symptoms continued all day, and he complained that his throat was sore. In the evening he complained of a swimming in his head, which he supposed was brought on by stooping. He, notwithstanding, visited his friend, S. Johnson, about a quarter of a mile distant, returned at nine o'clock, ate a hearty supper, and rested well the fore-part of the night. Early on the morning of the 20th, it was found that his respiration was laborious, was very restless, complained of great pain in his head, and oppression in his breast, but did not incline to speak, nor did he appear in the smallest degree sensible of his alarming situa-

tion. About six o'clock he groaned twice, and expired. Some means for resuscitation were employed, but without effect.

Several physicians, upon meeting in the evening, with an intention of opening the body, finding a sensible warmth under the right axilla, advised the body to be covered with a blanket. Finding the body next morning still warmer, the examination was deferred till the afternoon, when a sensible change having taken place, evidenced by fætor and universal coldness, dissection was agreed upon.

Upon laying open the thorax, which was remarkably large and well formed, no morbid adhesions were found to exist, but the lungs were universally suffused with blood, except a very small portion of the right lobe. The heart, near the base, on the left ventricle, was inflamed about the circumference of three inches, and upon cutting into the ventricle, at the inflamed spot, it was found to be three times its natural thickness, bearing an appearance like contusion.

The immediate cause of death in this case was evidently the effusion of blood, which may very properly be termed *apoplexy of the lungs*, and which might perhaps have been prevented by timely and copious depletion; but, like the preceding case, it was attended with symptoms so treacherous, that the real nature of the disease could not be ascertained. Whether the inflammation in the heart predisposed to this effusion, and whether the pain in the head and drowsiness indicated an affection of the brain, or was purely symptomatic, it is now too late to determine.

Yours, &c.

WILLIAM BALDWIN.

J. R. Cox, M. D.

A Case of Phthisis Pulmonalis, successfully treated with Mercury, &c. By Dr. JOHN HAMM, of Dover, Delaware.

Dover (D.), February 10, 1808.

DEAR SIR,

I TRANSMIT you a case of phthisis pulmonalis, cured by the method lately laid down by professor Rush, and which, I am happy to find, is daily overcoming those prejudices so natural upon the first discovery of a new remedy. The science of medicine being established on an induction of facts, the faithful histories of the successful treatment of dangerous diseases, must be obvious to every practitioner of the healing art. With this view it is, that I have been induced to add to your valuable collection one case more, of a perfect recovery from one of the most distressing and mortal diseases which afflict mankind.

Yours, &c.

JOHN HAMM.

Dr. John Redman Coxé.

Mr. Henry Steel, aged about 23 years, came under my care last November. To give a more satisfactory history of his previous situation, I transcribe a letter on the occasion, from James Tilton, M. D. of Wilmington, in this state.

"Bellevue (near Wilmington), November 3, 1807.

DEAR SIR,

"This will be handed you by Henry Steel, whose unfortunate situation compels him to leave our bleak mountains and descend into your plains, for a more temperate climate. This poor fellow was seized this fall with a severe pulmonic fever, which, I am of opinion, terminated in an abscess of the lungs. His spitting has abated considerably, and he is without hectic

fever. He takes about two drachms of bark per day, and a dose of asthmatic at night. He also makes his common drink of the tea of wild cherry-tree bark. Under this course, he appears to mend. When he arrives in your district, you must be the judge, when and what alterations are necessary."

This letter was not delivered to me until the 20th of the same month (having been absent at Philadelphia on his arrival in the neighbourhood of Dover); and except his pulse, which put on a small degree of tension, and a severe hectic fever having supervened since he left Wilmington, probably from the fatigue of the ride (50 miles), he differed not in any other particular from the description given of his situation by Dr. Tilton. He had, notwithstanding this change in his disease, continued taking the bark regularly, but which at length had become so nauseous and oppressive to his stomach as to compel him to abandon it. Having now grown much worse; lost his appetite, in a great measure; and wearied with scorching fevers; harassing cough; sleepless nights, and restless days; he had determined, as he informed me, to patiently suffer, and die; conceiving that no further assistance could be afforded him, as he had a disorder from which very few recovered. His condition was truly lamentable. He expectorated pus in large quantities, frequently a pint at night for several weeks, with harassing cough, chills, fever, hoarseness, constant pain in his breast or sides, and profuse night sweats, which had produced emaciation and debility to an alarming degree; and which, together with a cadaverous aspect, all indicated an unfavourable, if not speedy issue of his disease.

It is proper to remark, that the "pulmonic fever" which seized him in the fall, was during the prevalence of the influenza in this state; and, after apparently recovering from a slight

attack of it, he was attacked with this inflammatory disease, which confined him to the bed two or three weeks, and for which he was plentifully blooded, &c. The phthisis pulmonalis, was not hereditary in his family; yet he has the appearance of malformation of the thorax, and for three or four years past has complained occasionally of a weakness in that part, though he has looked healthy, and has never had any violent disease.

Haxing examined minutely into his situation, I was led to believe that this was the "precise and appropriate time" to administer mercury, before the excitability was exhausted below that point in the system, in which that medicine will excite disease instead of removing it. Accordingly, having assured him of the prospect of a recovery, and exhilarated his mind, hitherto plunged into the deepest despair, I directed for him without delay a powder, composed of one grain of calomel, one-fourth of a grain of tartarized antimony, with five grains of sal. nitri pur. to be regularly taken morning and evening until his gums should be affected; with two grains of opium every night at bed-time, to use a light and nourishing diet, refraining from coffee and tea, and in their place, boiled milk and chocolate; to dress warm with flannel to the skin (*a capite ad calcem*), to change it frequently, and to keep as much as possible in a heated stove room; and for a common drink to use small-beer and milk and water.

November 29. I saw him to-day: the medicine creates no uneasiness or irregularity in his stomach or bowels; a daily hectic comes on the afternoon, going off with excessive and offensive sweats; violent pains alternating from the breast to the sides with considerable stricture, and producing paroxysms of laborious breathing, which oblige him to sit up more than he

is able, with a disposition to faint ; the cough continues violent, and the purulent expectoration great ; pulse a little tense.

December 6. Visited him to day ; in better spirits ; medicine has produced little effect ; all the symptoms nearly the same, except that he sleeps better ; directed to be continued until his gums should be thoroughly touched with mercury, with the anodyne at night.

Having occasion to go into Virginia, and being absent from home one month, I was agreeably surprized on my return to find that he had most rigidly attended to all my directions ; and was now so far relieved from all his distressing symptoms, as to be able to ride into town in a chaise, a distance of six miles, to see me, and narrate the wonderful revolution which had taken place in his system since I saw him.

The ptyalism was moderately kept up about four weeks, when the fever diminished, chills left him, night sweats moderated, pains in the breast and sides nearly subsided, expectoration small, having changed from pus to phlegm ; sleeps sound without the opium ; and, having taken all the medicines which were ordered, considered himself perfectly cured. Seeing no necessity whatever to give any more medicine, I now advised him, whenever the weather permitted, to exercise daily on horseback, to drink liberally of wine, to use a nourishing and stimulating diet, and to avoid every species of excess during his life.

February 10, 1808. He continues entirely free of all his old-symptoms ; his countenance as florid as formerly ; sleeps soundly ; eats heartily ; gains flesh daily ; rides on horseback

four or five miles without fatigue ; relishes society as usual, and is about returning home to prosecute his business.

It is worthy of remark, that the successful use of mercury does not depend on the quantity exhibited ; inasmuch, as this patient only took forty-eight grains. Does this depend upon the idiosyncrasy of the system, or the "precise and appropriate time" for exhibiting the mercury ?

Account of the Successful Treatment of a Dropsical Enlargement of the Body; and of an Ulcerated Sore Leg. By Dr. WILLIAM FISHBACK.

Jeffersonton, April 5, 1808.

DEAR SIR,

I HAVE transmitted the following case to you correctly, as it occurred to me. Whether it merits a place in your Museum or not, I leave it with you to judge.

A negro man, belonging to R. Carter, thirty years of age, long subject to an ulcerated leg, which is generally a fourth larger than the other, began to swell, which commenced first in his legs, but soon spread over his whole body. His scrotum and penis were increased to an enormous size ; his face and hands were also greatly enlarged ; in short, he was completely puffed up *a capite ad calcem*.

His pulse was full and tense, but not frequent. He had exacerbations every evening, which lasted about an hour ; a continual nausea and retching at the stomach ; a difficulty of breathing, with a burning sensation about the heart, as he used to express himself.

After he had remained in this situation three weeks, I was consulted. I readily resolved on the method of treatment I should pursue.

Having first taken from his arm nearly a quart of blood, I gave a strong emetic of tartar, which operated violently. Then having evacuated his bowels with a large dose of calomel and jalap, I proceeded with small doses of calomel and tartar, two grains of the former with a half of the latter, until his gums were slightly affected. He took, once or twice, thirty drops of tinct. opii, to prevent a diarrhœa. I continued, however, to bleed him every other day copiously, until I had bled him four times, including the first. His urine, which was discharged in small quantity before, became very profuse. His body was reduced to its ordinary size in one week after he commenced with the medicine ; and every symptom abated.

His sore leg, which had for several years been much larger than the other, became nearly as small ; and has since, by bathing it an hour every day in cold water, and the pressure of tight bandages wrapped around it, become perfectly well. Whether it will remain so or not I cannot tell. Some time has, however, elapsed since, and no symptom of its recurring yet appears.

During his convalescence, he took several ounces of bark.

I am, sir,

Respectfully yours, &c.

WILLIAM FISHBACK.

Dr. John Redman Coxe.

Speculations on the Nature, &c. of Hæmoptysis. By Dr.

GEORGE BUCHANAN.

*Wadesborough, Anderson County (N. C.),
December 30th, 1807.*

SIR,

HAVING undergone various treatment for an hæmoptysis of five years standing, to which I am so strongly predisposed, that neither animal food for five or six months in the year, nor spirits, wine, beer, or cyder, at any time, can be indulged in without producing the most sensible irritation or an attack of the complaint itself, I hazard the following opinion of its nature.

The active properties of a blood-vessel are produced by its appropriate excitement.

Dilatation, alternating with contraction, is an active property in an artery, depending on excitement, and consequently on the quantity and quality of the blood, as the principal mean of excitement to it.

Withhold blood from the artery, and contraction and dilatation are proportionately diminished: yet these properties, not being absolute, but having a considerable range, may still exist and be compatible with a less vigorous state of health. As more of this stimulus is withheld, excitement is withdrawn from the extremity; not only in common with the whole length of the artery, but, in consequence of peculiar asthenic confor-

mation in those predisposed to hemorrhages, the extremity of the artery is first affected by the general relaxation.

This relaxation in the extremity of the artery is the immediate cause of the local excitement. It can readily be conceived how the impulsive powers of the circulatory system, still acting, though with diminished force, should, in consequence of this local relaxation, impel thither a more than proportionate share of fluid. The blood, by gaining admission into the now comparatively passive extremity of the artery, acts on it as a new and greatly distending stimulus.

This renewed stimulant operation in the extremity, producing local excitement, excites in its proportionate degree that active property of the artery, contraction, which is immediately succeeded by a dilatation correspondingly large. In this way I would account for the inequality in the distribution of the blood referred to by Dr. Cullen; for, while under the operation of the contracting process, the volume of the arterial blood is of a definite magnitude; but this volume is capable of considerable enlargement when the antagonist and equally vigorous process of dilatation instantaneously succeeds. Yet the causes of increased contraction and dilatation not existing in the rest of the arterial system, the blood is necessarily determined to the place of local excitement. The sphere of this excitement, and with it the afflux of the blood, enlarges; and now the utmost extremity of the vessel is forced entirely open, and blood is poured out.

As contraction and dilatation in the arterial system, though confined to no particular degree, yet necessarily have their definite range, hemorrhagy, except where the vessel has been considerably ruptured, must naturally produce its own cessa-

tion. Yet on the very same principles the cessation will be only for a short time. With it the local excitement is removed; the part relapses into its former relaxation; and the same causes produce again the same effects.

I shall not enter on any defence of this juvenile sketch, hastily conceived when a student, and now transcribed without time for inquiry. If you think it worth a place in your Museum, you are at liberty to insert it; if not, you will reject it.

I am your most obedient,

GEORGE BUCHANAN.

Dr. John Redman Coxe.

An Account of the Influenza, as it appeared in the State of Kentucky, in the Year 1807. In a Letter from Dr. MAXWELL SHARP, to Dr. BENJAMIN RUSH.

Bowling-green, Warren County (K.), April 3d, 1808.

DEAR SIR,

I HEREWITH transmit you a brief account of the influenza, as it appeared in this country last fall: how far it may accord with the history of it in other years and in other countries may, perhaps, not be undeserving of your attention.

With best wishes for your happiness,

I am, dear sir, yours, &c.

MAXWELL SHARP.

Dr. Benjamin Rush.

THE weather, during the spring and fore part of the summer, was fluctuating, but mostly wet, and cold for the season; during which time the mumps and hooping-cough prevailed,

chiefly amongst children ; but neither of these diseases assumed any new or remarkable symptom beyond what is common to other years. The autumn was variable between heat and cold, but remarkably dry : from the latter part of July until the first of November, there was scarcely any rain ; and none after August worth mentioning. It was remarked, by the oldest people here, to be the driest season they had ever seen, in this, or any other country. The springs and fountains dried up ; the herbage withered ; the trees were prematurely stripped of their foliage ; the meridian sun was enveloped in thick mist for several days*, so that even nature herself seemed for a while to have put on sackcloth and ashes. The autumnal diseases of the country, which, in the falls past, were bilious, and in many cases highly inflammatory throughout their whole course, were last fall more inclined to the typhoid state of fever than they ever were known to be in this part of Kentucky. In several cases that came under my notice, the fever appeared to fluctuate between the real synocha and typhoid ; but in no instance did it assume the form of typhus until blended with the influenza. The different states or grades of this fever were more or less plainly marked by the mode of treatment used throughout the range of the disease, which was often protracted to thirty or forty days.

Some time in the beginning of November, the fall rains came on ; they were ushered in by premonitory signs, not unlike those described by tropical writers. These rains were frequent and heavy ; from a severe drought the transition was but short to an impetuous and heavy flood. The fall fever had scarcely begun to subside before the influenza began to be felt ;

* This darkness was occasioned by the wind's blowing over the vast conflagrating forests to the westward of this, and the great river Mississippi.

it came from the north-east, and reached this about the beginning of the last week in November, and, like the plague spoken of by Procopius, it spared "neither island, cave, nor top of mountain where mankind inhabited." It blended itself with the remittent fever, and assumed a variety of forms, too tedious to recapitulate; but the first and most general symptoms were, a sore throat, hoarseness, lassitude, chills, and fever: these lasted from two to four and five days. Sneezing was frequent, and the nostrils were so inflamed, in many cases, that it became exceeding painful to breathe through them. I well remember this was the case with myself, for several days. A pain in the head was common; in one case it fell in the ears, and produced abscesses that discharged themselves externally, and the patient recovered; in another the abscess formed in the frontal sinus, and discharged a thin sanies through the right nostril and inner canthus of the same eye: this case terminated fatally. A pain between the eye-balls was in some instances so severe as to threaten delirium.

The ophthalmia was not an uncommon symptom; a depraved taste in the mouth was common; some had swelled lips, and others the tooth-ache. Coughing was common to all, and generally lasted three or four weeks, and in some instances throughout the winter. Where the force of the disease fell on the lungs, it produced spasm and pain that extended to every direction, and, if not removed in time by warm diluents, opiates, &c. soon proved fatal. A pain in the head, in some, ushered in the disease only; in others it accompanied it throughout the height of its violence. In some there was a vomiting, in others only a slight nausea; but the appetite was a good deal deranged in all. The bowels in general were regular, but in some instances it was otherwise.

I saw a case where the influenza and rheumatism attacked in conjunction, and, while the former invaded the trunk of the body, the latter fell with its whole force upon the extremities, which were so distorted by it, that the metacarpal bones of the hands appeared entirely luxated, nor was it before the return of the warm season that the patient, in whom this latter symptom occurred, could stir about, although he had taken considerable quantities of the most powerful medicines directed in those complaints. The pulse was generally full and soft, except where there was evident symptoms of peripneumony. The fever, in all cases truly idiopathic, was the febris sensitiva of Dr. Darwin, and had an evident exacerbation every evening. The skin for the first few days was warmer than common, and often moistened with sweat. No material change in the urine is recollected; for the most part it was copious and clear as in good health.

The remedies that I chiefly used were, a lenient cathartic of senn. et mann. or sal glauberi. After the operation was over, 60 or 70 drops of paregoric elixir were directed to be taken in some warm tea; this brought on a gentle sweat that often relieved the throat and breast, by the first intention (if I may be allowed the phrase). But if the first doses of these medicines failed, the second or third with a generous diet never did, in removing an ordinary attack; but, where there was a co-operation of other diseases, it became necessary to vary the means to accord with existing circumstances. Where the pulse was quick and tense, venesection was immediately resorted to, as the most probable remedy to reduce it. If a stricture in the breast, or pain in the side existed, the application of an epispastic always followed the loss of blood. The first remedies were likewise now used, with this difference, that instead of the more mild cathartic already mentioned. cal. and

jal. were preferred in the beginning of the attack, in order more effectually to open and cleanse the bowels; but after this point was gained the use of them was laid aside.

For a pain in the fore part of the head, or between the eyes, an application of the vol. æther, either externally applied or snuffed up the nostrils, gave relief; sometimes the theb. tinct. was made use of in this way, with evident benefit.

Under this mode of treatment, plain and simple as it is, the disease almost always yielded. I lost but three patients by it. The first case was in consequence of intoxication after he was attacked; the second had a joint attack of the influenza and peripneumonia, which had deprived him of all sense before I saw him; the third terminated in the typhus mitior, which after a sickness of twenty-one days bore him to his grave. In the upper part of the state the influenza was very mortal; many families buried four, five, and six in the course of as many days; but here, and to the south and westward of this, it was much milder in its effects.

Some time late in the month of December, the violence of the disease began to abate; it travelled gradually on towards the south-west, at the rate of about fifty miles a week. The agent for Indian affairs in the Chickasaw nation informed me, that it was about five weeks after the influenza was first felt here before it got there. It affected the Indians in the same manner as the whites, which proves that habit, manners, custom, or the mode of living, has little or no effect upon this insidious disease.

The issue of the influenza is nearly the same under every mode of treatment. But few die of it, whether the remedies administered in it be depleting or sudorific, or whether the cure be left to nature. But the *consequences* of it are widely different, according to the plan of treatment which is adopted. The following extract of a letter from Dr. James Norcum, of Edenton, in North Carolina, to Dr. Rush, of this city, is calculated to show, that blood-letting not only conducts the patient with ease and safety through the acute stage of that disease, but insures his exemption from the fatal diseases which so often follow it, when that remedy is omitted.—EDITOR.

Observations on the Influenza, as it appeared at Edenton, in North Carolina. By Dr. NORCUM.

SINCE I returned to Carolina, I have been engaged in business with Dr. Sawyer, and have had a respectable practice, and enjoyed a greater share of success than I ever before experienced. In the influenza, which prevailed here from the last of September until the beginning of the year, I hardly lost a patient. The disease, in its form and character, resembled very nearly that which you have described in your Medical Inquiries. It was universally inflammatory, and uniformly yielded to depletion.

There appeared to me to be, in the course of the season, a greater proportion of cases with pulmonary determination than is common, and some of them the most inflamma-

tory I ever saw. One patient I bled seven times, largely, in forty-eight hours, and another three times in eight hours. The event in both cases was favourable. It was my happy lot to be instrumental in saving the life of an amiable woman, through a series of relapses, by, I am sure, not less than fifty bleedings. Bleeding I found, in all cases of violence, an antidote to the disease, and, in milder cases, less direct and less active evacuants never failed to cure.

The most fatal consequences of the fever, where it was not properly treated or speedily cured, were dropsy and consumption. Few of these have fallen to my share, for a reason I have already assigned. In the dropsies that have occurred within my observation, my practice has been happy. The lancet, purging, nitre and sage tea, cream of tartar, and mercury have been my remedies. And, in consumption, I have cured and relieved more patients than I ever saw cured, according to the number I have attended. My remedies have been the lancet, opium, camphor, horehound, and a salivation.

Account of a Pin extracted from the Side, which had been swallowed two years before. By Dr. NEWCOMB, in a letter to Dr. FARQUHAR, of this city.

Boston, May 19, 1808.

DEAR SIR,

THE following case interested me highly when it occurred. Should it seem of sufficient importance to merit publication, it is at the disposal of your friend Dr. Coxe. With respect, I remain

Your friend and much obliged humble servant,

DANIEL NEWCOMB.

Dr. George Farquhar.

On the 30th of October, 1807, Mr. Asa Browning applied to me for relief from pain in his side. About two years before, he supposed that he had swallowed a pin, but was not absolutely certain, and thought no more of it until the evening when he called at my house. I examined his side, and found a puffy swelling about three fingers' breadth above the right nipple, in the centre of which was situated a small pimple, that was somewhat painful on being pressed. I made an incision into it with an abscess lancet, and extracted a common pin. It was bright, crooked, and without a head. No matter was discharged with it.

About six months after the supposed accident, he had pain in the chest under the spot from which the pin was extracted, together with cough and expectoration of blood and matter. His physician let blood and purged him freely, so that he recovered in about a fortnight; but the pain and cough continued to trouble him whenever he caught cold.

The patient is a labouring man from the country, and about 25 years of age. He left town in the morning after the operation. I have not heard from him since.

Case of Anæsthesia of the Left, and of Paralysis of the Right Side of the Body.*

Edinburgh, December 4, 1781.

CHRISTY SMITH, ætat. 21, complains of cardialgia, sour eructations, pyrosis ruminatio, and great flatulence in the stomach, sensibly increased after taking food, for which she has but little appetite at any time. Has also cough and considerable dyspnœa, much aggravated towards night, and attended with a difficult viscid expectoration. The sensation

* In the 4th volume of the New York Medical Repository, we have a very remarkable case of a total loss of feeling of the hands and feet, without any impairment of the power of motion, as related by Dr. Samuel Brown, of Kentucky. He has also collected a variety of instances to prove a loss of sensation without that of motion, particularly one related by Mr. Hollier and Dr. Hervey. These cases go far to render probable an idea which I have elsewhere proposed, of the existence of *two* sets of nerves, one appropriated to sensation, originating in every sentient part of the body, and terminating in the brain; the other appropriated to motion, originating in the brain, and terminating in the organs of motion; through the medium of which, volition is conveyed to those parts of the body we wish to excite into action; I am, therefore, induced to add another case, which is still stronger and more in point, because sensation was lost on one side, though motion continued, whilst motion was lost on the other side, though sensation continued. The above case occurred in Edinburgh as a clinical patient, in the year 1781, under the care of Dr. Gregory, who was so polite as to permit me to copy it from his papers. This case being very extraordinary (and never, as I believe, made public), and the mode of treatment fully detailed, I have transcribed the whole paper. EDITOR.

of external impressions of the whole *left side* of the body is much diminished, *although she has the entire use of it*, and thinks the heat in it is increased. The *right side* is affected in a manner very dissimilar to the left. It feels generally cold; and she is incapable of grasping any thing with the right hand, or, when she sits, of *stretching* forth her right foot without much difficulty, but no pain; in walking, draws it after her: complains of a constant deadness and weight, with frequent pricking sensations throughout the whole side. Her head is often affected with vertigo, and she cannot long look stedfast at an object, without her sight becoming very *dim*. She has complained of the affection of her stomach, particularly the flatulency, for a long time. It was not till three weeks ago, that the sensation and motion of the body became affected; previous to which she had a slight vertigo, without any globe rising up from her stomach, or any other circumstance that she could suppose connected with it. She took a vomit on the 2d, and on the 9th lost about $\frac{3}{4}$ ix. of blood from the arm, which she thinks relieved the vertigo for a little time. This symptom occurred again yesterday, and still continues severe. About three weeks ago was exposed to *cold* when *hot*; soon after which, most of the present symptoms supervened. Pulse 80. Thirsty. Belly and menses regular. Cap. sem. sinap. $\frac{3}{4}$ ss. bis in die.

15th. Had a bad night, with much cough. No change of symptoms. Abradat. capillitium; applic. emplas. episp. nuchæ; et sinapis. brachio sinistro, post hor. un. amovend. vel prius si doluerit: Adeat machin. elect. quotidie, et hab. scintillas plurim. et succussos aliquot; utat. julap. mucilaginos. urgente tusse.

16th. Felt the shock, but not the sparks, on the left side;

some pain and great heat when the sinapism was removed, but not during its application ; rather more sensibility in the left side than formerly ; slept ill ; cough was troublesome ; complains of nausea on taking food ; no relief of the paralysis of the right side, which, by mistake, was not electrified as the left was.

Educant. scintil. ex utroq. lateri ; hab. succuss. duodecīm per tot. corpus ; fricant. artus ; applic. sinapis. cruro sinestr. urgenti dolore amovend. vel post hor. un. quamvis non doluerit ; repet. cetera.

17th. Pulse natural ; limbs of the right side started with the shocks, and she moved them better for some time afterwards ; some pain near the knee, while the sinapism was applied ; arm sore by the blister caused by the sinapism the day before last ; sensibility of the left side in general still dull, but manifestly acuter than formerly.

Applicet. sinapism. cruro dext. urgent. dolore amovend. contin. reliqua.

18th. Little change of symptoms to-day ; the motion of the right leg seemed freer last night after being electrified ; complains of vertigo and sickness on sitting up, especially when near the fire.

Applicet. empl. epist. capit. raso statim ; beef steak to-day for dinner ; a bit of meat every other day ; omit. sinap.—repet. cetera.

19th. Pulse still natural in frequency, and feeble ; feeling rather more acute in the left side ; more motion in the right ;

blister has risen well on the head, but she did not feel it on the left side; diarrhœa gone. Capt. bolum ex sal. C. C. grs. x.; conserv. rosar. Q. S.; repet. reliqua.

20th. Sweated a little after taking her bolus; slept pretty well; no change. Foveant crura per H. ij. & cap. bolum ut heri prescript. fuit. & reliq.

21st. Pulse still natural; complains much of vertigo and nausea; little change on the left side; thinks the motion of her right leg is better; not electrified yesterday,

Admov. hirud. viij. temporibus; omit. bol.—applic. iterum sinapis. cruribus.

22d. Vertigo and nausea gone; little change on the left side; return of sensation of heat in the right leg, since the sinapism; appetite still bad. Omit. hirud.; rep. cetera.

23d. Motion of the right leg sensibly better; anæsthesia of the left much as usual; the sinapism was not applied last night.

Applic. sinap. brach. & crur. sinist.—contin. electric.

24th. Symptoms as yesterday. Applic. sinap. crur. dextr. urgent. dolor. amovend.—contin. electric.

25th. Motion of the right leg considerably better; complains of weakness and tremor of the left after being electrified; the right arm starting on being electrified. Cont. electricitas.

26th. Severe return of vertigo; right leg continues better; left leg as formerly. Admov. stat. hirud. vi. temporib.; cont. electric.

27th. Pulse natural; vertigo has returned since the leeches were applied; right leg greatly better; feeling of the left side no better. Applic. iterum sinapis. brachio & crur. sinist.; cont. electricitas.

28th. Cont. electricitas.

29th. Swallowed a pin about a quarter of an hour ago. To take as much porridge, and as frequently, as her stomach will bear.

30th. Leg continues to mend; some pain of the stomach yesterday, but none to-day. R. electuar. lenit. & cryst. tart. aa \bar{z} i, syrup. Q. S.; tere probe, ut fiat electuar. cujus capt. cochl. parv. accumul. alter. quaq. hor.: incip. cras mane; cont. electric.

31st. Little change of symptoms; spontaneous diarrhœa last night; no pain to-day; has taken but one dose of her physic; catamenia adsunt; omit. medicin.

R. ol. olivar. \bar{z} ij.; alk. volat. caust \bar{z} i. M. ft. ungt. quo inunguat. crus dext. mane & vespere.

January 1st, 1782. No change; catamenia cessarunt. Rep. electuar. lax. stat.

2d. Thinks her right leg and arm rather worse; no change on the left side; slight head-ach, but no vertigo; did not take the physic; catamen. redierunt; alvus naturalis.

3d. Pulse natural; copious natural sweat this forenoon; little sleep last night, and great sense of coldness in the right leg, which is now become warm like the rest of the body; catamenia adhuc fluunt.

4th. Little change of symptoms; catamenia cessarunt. Rep. semen. sinapi, ad ζ ss. ter in die; cont. electricitas.

5th. Motion of the right side sensibly better while she was not electrified, and better since she was electrified yesterday; sensation of coldness remains in the right side.

Educant. scintil. plurim. ex brachio, later. & crur. dextr.; omit. ol. volat.; repet. sem. sinap.; applic. iterum sinapism. crur. & brachio dextro.

6th. Sinapisms by mistake applied to the left leg and arm; great sense of coldness in the right side, and sometimes in the left leg and thigh, though the rest of the left side feels hot, motion of the right leg, rather better again; no sensibility in the left side, except in the part inflamed by the mustard; some return of head-ach and vertigo.

Admov. hirud. iij temporib.; indat. setac. nuchæ; applic. sinapism. brach. & crur. dext.; rep. sem. sinap. & electr.

7th. Vertigo and head-ach removed; motion of the leg greatly better; rather more feeling in the left side; sense of

heat in the right arm and leg since the sinapisms were applied ; right hand still cold.

Indat. setac. nuch. ut heri præscript. fuit ; rep. sem. sinap. & electric.

8th. Complains of some degree of faintness since the seton was put in ; felt the needle on the right, but not on the left side of the neck. Contin. medic.

11th. Motion of the right leg, and sight of the left eye, rather better ; vertigo diminished ; the seton begins to run. Contin. medic.

12th. Vertigo returned last night, and, on waking about midnight, she found a complete paralysis of the left leg and arm ; face and tongue not affected ; pulse natural ; anæsthesia of the left side as complete as ever ; the heat remains in it as formerly. Admov. cucurbit. utriusq. temporibus & educant. sang. ad ζ viii. ; rep. reliqua.

13th. Was cupped on both temples ; little blood from the left ; more from the right ; did not feel the scarifications on the left ; vertigo removed, but some sense of heaviness remains about her eyes ; feeble motion, and full feeling on the right side, but neither on the left ; pulse 75, and feeble ; equal in both arms, but the left side still feels hot ; the right cold ; slept ill ; appetite pretty good ; excretio alvi & urin. naturalis.

Rep. semen. sinap. & sinapism. brach. & crur. sinestr. ; hab. aq. cardiac. $\mathfrak{f}\mathfrak{ss}$ i. in die.

14th. Pulse 84, and stronger than usual; slept well; some return of feeling in her left leg since the sinapisms were applied, but not in the arm. Rep. sinapism.; capt. pil. mercurial. gr. x. vesper.

15th. Arm inflamed and blistered by the sinapism; sensibility in the inflamed parts; no other change; pulse natural. Rep. pil. & aq. cardiac.

16th. No change. Contin. medic.

17th. Motion of the left leg and arm no better; considerable return of sensation in the left leg, but not in the arm; sense of heat continues in the left arm; the leg feels cold to herself, though not to another; pain of left leg to such a degree as to prevent her sleep; other symptoms as before. Rep. pil. mercurial.

18th. Considerable salivation; no change. Omit. pil.; utat. gargaris. emollient.

19th. Salivation continues; both motion and feeling in the left leg much better, but neither in the left arm; the motion of the right rather more weakened. Contin. medic.

20th. Salivation much abated; left leg better in sensation and motion. Contin. medic.

21st. Some return of motion, but none of feeling, in the left arm; motion of the left leg better; the feeling nearly returned; the right arm is sensibly stronger. Contin. medic.

22d. Salivation much diminished. Contin. medic.

23d. Motion of the left hand still better ; both feeling and motion in the left leg and thigh ; no feeling in the left side of the body, nor in the arm ; motion of the right side mends ; uncommon sense of coldness in the right side ; pulse natural ; heat of the left side, entire to herself and the touch of others ; slight salivation ; she loathes her punch. Omit. aq. cardiac. ; rep. sem. sinap. & electric.

24th. No change of symptoms ; catamenia adsunt. Rep. sem. sinap. ; omit. electric.

26th. Increased sense of heat on the left side of the body and head, with diminished sensibility ; motion and feeling of the left leg and thigh pretty entire, with motion, but no feeling, in the left arm ; right side, as formerly, weak in point of motion ; no head-ach or vertigo ; salivation gone ; catamenia adhuc fluunt. Contin. medic.

27th. No change. Contin. sem. sinap.

29th. No change ; catamenia cessarunt. Rep. pil. mercurial. & reliqua.

31st. Bad taste and clamminess beginning in the mouth ; no other change ; milk morning and evening ; a bit of meat, as formerly.

February 1st, 1782. No change in the left arm ; left leg now sensibly better and stronger than the right ; copious salivation again. Omit. pil. ; repet. cetera.

2d. Salivation continues ; motion of the legs evidently better. Contin. omnia.

3d. No change. Renew the seton cord.

4th. Left side restored completely to its strength, but only the leg and thigh have recovered their feeling ; motion of the right side rather better ; salivation copious. Contin. medic.

6th. Complained last night and to-day of pain of stomach, heartburn, and some sense of swelling ; she had a dose of ℥ss. of testaceous powder last night, with ten grs. of ginger ; no change of her other symptoms ; alvus naturalis. Cap. statim & iterum hor. som. nisi prius alvus dej. ; pulv. rhæi. grs. x. ; a charta farinacea.

7th. No effect from the physic, though she took two doses ; stomach relieved ; salivation almost gone ; no change of symptoms. Contin. medic.

8th. Left side almost as strong as ever ; feeling has returned not only to the leg and thigh, but also half way up the side of the body ; sight of the left eye, and hearing of the left ear, much better ; anæsthesia continues in the left arm and shoulder, and upper part of the side, and left side of the head and neck ; right side still weak, but growing gradually stronger ; no more giddiness, nor pain of the head ; salivation has ceased ; alvus naturalis. Hab. enem. commun. nisi prius respond. alvus.

Remitted to the ordinary physician, under whose care she speedily recovered completely of both anæsthesia and paralysis.

Account of the Meteor which was seen at Weston, in the State of Connecticut, on the 14th of December, 1807; with an Analysis of the Stones. By JAMES WOODHOUSE, M. D. Professor of Chemistry in the University of Pennsylvania.

ON Monday, the 14th of December, 1807, at six o'clock in the morning, a meteor was seen from the town of Weston, state of Connecticut. It appeared like a globe of fire, illuminated every object, and was about two-thirds the diameter of the full moon. About forty seconds after its appearance, three loud reports were heard, like those of a four-pounder. After the explosions, a number of masses of stone fell, principally within the town of Weston, although many of the same kind of stones were found six and ten miles distant from each other.

The specific gravity of a specimen of one of these stones was 3.696, at the temperature of 62° of Fahrenheit's thermometer.

Like the meteoric stones of other countries, when viewed through a microscope, they are found to consist,

1st. Of pyrites of a silvery colour.

2dly. Of a substance of an orange or yellow colour, which is owing to the oxidation of the iron they contain, by means of water; for these colours did not appear previous to putting the stone in water, in order to ascertain its specific gravity.

3dly. Of an ash-coloured substance. And,

4thly. Of small bodies of a round, irregular, elongated, or elliptical figure, and black colour, containing metallic iron.

One of these stones, weighing a hundred grains, moved the south pole of a magnet seventeen degrees, and kept it stationary.

One hundred grains of the stone were reduced to a fine powder. Upon passing a magnet through this powder, twenty-two grains of it were separated.

According to an analysis of one hundred grains of one of these stones, they were found to consist of

Silex	50
Iron	27
Sulphur	7
Magnesia	10
Nickel	1
	<hr/>
	95
Loss	5
	<hr/>
	100
	<hr/>

The sulphur was seen distributed through the silex, by the naked eye, in round globules, the size of a pin's head, after dissolving the powdered stone in diluted nitric acid.

The quantity of nickel is guessed at; but the presence of this metal is evident, from the green colour of the muriatic sq-

lution of the stone, and from the purple precipitate which takes place, upon adding the prussiate of ammoniac to a filtered solution of the stone in marine acid, after it is saturated with alkaline gas, and the iron separated.

An elaborate and accurate account of this meteor has been published by Messrs. Silliman and Kingsley, of Yale college, Connecticut.

An Account of the Perkiomen Zinc Mine, with an Analysis of the Ore. By JAMES WOODHOUSE, M. D. Professor of Chemistry in the University of Pennsylvania, &c. In a Letter to the Editor.

SIR,

THE zinc mine, an account of which you have requested for the Medical Museum, is situated on the side of a high hill, on the bank of Perkiomen creek, about twenty miles from Philadelphia. The miners have made an excavation to a considerable distance, on the side of the hill, in which a man can walk in a stooping posture. They have also nearly completed a shaft on the top of the hill. The surface of the earth is covered with large masses of compact and laminated sulphate of barytes, iron pyrites, rock chrystal, quartz, &c. which have been dug up from the bowels of the earth, in sinking the shaft, and making the excavation.

Three varieties of ore are found in the mine: the lead-coloured, the yellow, and the deep black.

The specific gravity of the lead-coloured (which is the most abundant), at 60° of Fahrenheit, is 5.3121.

Two thousand grains of this ore, reduced to an impalpable powder, and exposed two hours to the intense heat of an air-furnace, lost 900 grains in weight, which consisted of water and sulphur.

One thousand grains of the powdered ore were boiled an hour in an oil flask, with two ounce measures of sulphuric acid. Water was added to this mixture, which, being filtered and evaporated, produced a compact mass of sulphate of zinc or white vitriol, weighing 1730 grains. A residuum was left in the flask, which weighed 508 grains; upon exposing it to heat, 262 grains of sulphur sublimed from it, and the residuum in the subliming vessel weighed 246 grains, which, boiled in an ounce measure of sulphuric acid, yielded 200 grains of white vitriol.

The residuum from the 246 grains was mixed with potash and exposed to heat, when it formed a brown mass, which being powdered and dissolved in water formed the liquor of flints, from which the silex was precipitated by the muriatic acid.

One hundred grains of the ore were dissolved in an ounce and a half measure of nitric acid, diluted with an equal quantity of pure water. Ten grains of a residuum remained, which, when viewed through a microscope, appeared to consist of fragments of grey quartz, mixed with globules of sulphur. The zinc was precipitated from this nitric solution by mild potash, and, when dry, it weighed 140 grains.

It is said by chemists, that the weight of the oxide of zinc, precipitated by mild alkali from its solution, will amount to 193 grains, for every hundred of the metal it represents.

According to this calculation, one hundred grains of the Perkiomen ore, must contain 72 of metallic zinc.

The white vitriol obtained from 1000 grains of the ore, was dissolved in pure water.

Plates of metallic zinc were left in this water, for several days, when 26 grains of metallic iron were precipitated.

Metallic zinc was procured from the ore mixed with charcoal, by exposing the two substances to the heat of an air-furnace, in a coated earthen retort, to the neck of which a tin tube was luted, which communicated with water, in order to keep off the action of the oxygenous portion of the atmosphere.

Brass was manufactured by mixing the powdered ore with charcoal, and laying pieces of copper on the surface of the coal, and exposing the whole to the heat of an air-furnace, in a covered crucible, for several hours.

Similar experiments were performed on the black ore, with nearly the same results.

According to these experiments, 100 grains of the Perkiomen ore consists of about 72 parts zinc, 22 sulphur, 3 iron, and 3 silex. Some specimens of it contain a portion of lead.

These proportions are not given as just, for it is almost impossible to analyze a zinc ore with perfect accuracy. We can only approximate to the truth.

It is not absolutely fair to deduce the quantity of metal a zinc ore may contain, from the weight of its precipitate by a mild alkali, as recommended by Nicholson; for this weight will vary with the quantity of carbonic acid the potash may contain, with the degree of heat to which the precipitate may be exposed, and with the quantity of water which may adhere to it.

If we attempt to analyze the ore by manufacturing it into brass, as recommended by Accum, who considers this process as *tolerably* accurate, we lose a large quantity of the metal, which escapes in the form of the flowers of zinc.

Can this ore be worked to advantage in the United States?

No information on this subject can be obtained from any book with which I am acquainted. Dr. Meade, a gentleman possessed of extensive knowledge on mineralogy, informed me, that it is never worked in England. Dr. Bruce, professor of this science, in the college of physicians, New York, told me it is reduced in Wales; and Mr. Godon, of Boston, who is extremely well acquainted with subjects relating to this business, has declared that the zinc cannot be obtained from this kind of ore in the large way, but with the utmost difficulty.

Erratum.—Page 1 of the first number of this volume, lines 7 and 8, for “in your last volume, p. 240,” read “in the Medical Repository, vol. iv. hexade 2, p. 248.”

MEDICAL MUSEUM.

Vol. V.....No. III.

Theory of the Seat and Causes of the Diabetes Mellitus. By Dr. WILLIAM ASPINWALL, of Massachusetts. From his Inaugural Dissertation for the Degree of Doctor of Medicine, at the Commencement held the 27th of April, 1808, in the University of Pennsylvania.

THE proximate cause of diabetes mellitus, is (in this essay) supposed to be an affection of the liver. This consists in a suspension of its secretory powers, whether arising from torpor, paralysis, or any other cause. Although dissections have not shown the liver to be particularly affected, yet how seldom is it that there is any morbid appearance after death in most diseases! nor in diabetes is it necessary. Will a paralytic limb, after death, differ in appearance from a healthy one? This opinion of the proximate cause of diabetes mellitus, as has been acknowledged, was suggested by Dr. Rush. When speaking of the liver and its functions, he says, "that it is designed to receive blood from every part of the body, in order to subject that part of it, which had not been completely animalized or divested of its chylous proper-

ties, to a secretory process, and afterwards to pour out the product of this secretion, mixed with the liquor of the pancreas, into the duodenum, to be absorbed; or, otherwise, taken up by the lacteals, and conveyed with the chyle from the stomach, into the blood-vessels, in order to be completely converted into red blood, for the purpose of serving the various and important uses for which that fluid is intended in the human body." The product of this secretion is what the professor calls hepatic bile. It is, says Dr. Boerhaave, "mild, sweetish, and watery" to the taste. It becomes bitter only by stagnation in the gall-bladder. Does not a defect in the functions of the liver, satisfactorily account for the want of a proper assimilation of alimentary into the animal fluids spoken of by Dr. Cullen? That the liver is the viscus principally at fault in diabetes mellitus, is inferred,

1st, Because it occurs in persons intemperate in eating and drinking. The obstructions, enlargement, &c. of the liver, the effects of intemperance in drinking, are too well known to need any comment. In intemperate eaters it occurs frequently. In such cases, the digestive powers of the stomach are over-proportioned to those of the liver; for digestion cannot be supposed to be completed, until the chyle is so changed as to become a proper fluid for the nourishment of the body. The quantity of chyle must be in proportion to the quantity of aliment taken into the stomach, provided it be properly digested there. The spices which are added to give a zest to the food of all epicures, not only promote the flow of the gastric liquor, but also stimulate the mouths of the lacteals to an increased absorption. Hence the liver is excited to a secretion proportionate to the quantity of aliment received into the stomach. Hence also the increased quantity of bile in the system.

Although the liver frequently complains of the hard task imposed on her by bilious colics, sick head-achs, &c. she still continues her efforts, until, unable to relieve herself, she sinks, by degrees, under the oppressive burden, and becomes torpid and inactive. If the stomach do not sympathise, but continues to call for more aliment, and the lacteals to absorb the chyle as fast as it formed, the blood-vessels at length become surcharged with chyle. The chyle, from its quantity, becomes a stimulus to the heart and arteries, exciting morbid action in them. As the liver is incapable of performing its duty by changing it into bile, the kidneys, to relieve the system, take on increased action, which constitutes true diabetes mellitus.

2d. It is inferred that the liver is affected in this disease from the deficiency of bile, also from the costiveness and want of smell in the stools. Although Dr. Rollo believed the stomach to be the seat of the disease, he says there is reason to suppose a deficiency of bile, from whatever cause it may proceed; for, beside the light colour of the stools, there is no yellowness of the eyes, or even that high saffron-colour of the urine which takes place when the bile is sufficiently secreted, but prevented from passing into the intestines.

From what has been said as to the proximate cause of diabetes mellitus, the cure will readily be inferred. It must consist in obviating the saccharine process, in diminishing the morbid action of the stomach, and in restoring the liver to its healthy action*.

* A physician in Virginia, who has adopted the theory of the action of the liver taught by Dr. Rush in his lectures, and the doctrine founded upon it as suggested by Dr. Aspinwall, of the cause of diabetes mellitus being seated in the liver, has cured that disease by emetics, the design of which was to excite the liver, and thereby to induce that natural and healthy action in it, which is necessary to form perfect chyle. EDITOR.

Remarks on the Agency of Cold with respect to the living Body, in reply to "ARBUTHNOT." By A CONSTANT READER.

IN the last Medical Museum, we were presented with a few pages of "Observations on Cold," in objection to a series of experiments on the same subject, contained in the immediately preceding number of that work.

The operation of cold on the animal frame, cannot but strike every medical observer, as a subject of inquiry not only curious and deeply interesting to an inquisitive mind, but pregnant with importance in a practical sense: the former, since its mysterious effects are constantly more or less presenting themselves to our view, and the latter, because it is a very common, and often a very powerful remedy in the removal of diseases. Therefore it is with all due respect conceived, that a little dispassionate controversy on its *modus operandi*, will not prove an unacceptable offering to the multifarious readers of your useful Museum.

"Arbuthnot" is certainly entitled to the credit of having advocated the theory of the alleged stimulating quality in cold, with an air of prepossessing conclusion, and an irresistible spirit of ingenuity. But, at the same time, as if ingenuity was fated never to glide easily along for solid reasoning, I cannot but observe, that, after all he has done on the main point in dispute, I cannot yield my individual assent to his opinions. Perhaps complimenting his ingenuity, and rejecting his sentiments, may appear to some thoughtless readers like an inconsistency on my part, or rather like a very unusual jumble of bitter and sweet, by far too discordant for the mental palate of any common philosopher. But, in order that there shall be

no misunderstanding on this head, I shall certainly at once set about explaining my meaning. I mean that "Arbuthnot" is ingenious, not in discovering any thing really new to us, but that he is so in selecting, with more than a natural share of discernment, a few brief facts and arguments, which have long ago been advanced in support of his doctrine by Cullen, Currie, Hunter, and other writers as familiar to every student of medicine as A, B, and C to a school-boy. And when I say I cannot assent to his conclusions, I mean that I do not believe a single word of the imputed stimulating power of cold.

How it is, I shall leave for some genius more arrogant or better qualified to determine than myself; but so it happens to turn out, that my disbelief of "Arbuthnot's" doctrine is predicated on the very grounds which it appears have given rise to his conviction of its truth.

One of two things must be true: either my comprehension is dull, or his judgment is defective.

1st. The stimulating agency of cold is inferred from sensation and motion.

Now I conclude, from the sensation and motion which usually follow the application of cold to our organs, that it is a debilitating and not a stimulating agent. And for this good reason, though sensation and motion for the most part do follow the application of cold to our bodies, yet I challenge "Arbuthnot" to prove, by a successive and lucid consideration of all the intermediate changes which occur between the impression, and what he calls its effects, that cold is possessed of an inherent power to excite either sensation or motion. By doing

this he will be richly entitled to his favourite compliment of "the homage of my highest respect."

It would have been well if he had defined to us what idea he entertained of the nature of cold. He may be a disciple of Mushenbroeck, or, for all I know, he is a believer of the more fashionable doctrine of Black. He may have become an advocate for the supposed stimulating property of cold, through an erroneous impression that it is a peculiar and independent agent of vital energy. "Arbuthnot," however, will be so condescending and obliging, as to be more explicit in his next communication.

By cold I mean that inferior temperature which is exterior to the organ affected, and I use the word inferior, in a relative or comparative sense, with the greater degree of animal heat possessed by the organ. We may say that only one of two opinions can be true: cold must singly be either a debilitating agent, or a stimulus. It either subducts a portion of the standard heat of the system, and consequently lessens excitement, or it produces no such an effect, but, after the manner and fashion of a stimulus, it infuses new and additional excitement into the part. When, however, the uncontrollable and uniform tendency of heat to an equable distribution is adverted to, the former opinion would seem correct, and the latter erroneous. Cold has no known property of affecting the animal body separate from a low degree of heat. It cannot draw the matter of heat out of the living organ, and at the same time penetrate the senses with something like Mushenbroeck's frigorific darts, to produce motion and sensation. I am aware an attempt may be made to discard such sentiments as these, by a special appeal to outward appearances and popular opinion. Ask a peasant what excites the sensation of cold when his

hand is thrust into iced-water ; and being altogether ignorant of the changes which occur in the internal part of the organ, of the animal heat extracted, and of the sensation producing point of excitement which is left, ten chances to one if he does not reply, the iced-water.

But no matter ; reasoning from mere appearances has often, before this, proved fatal to many a speculatist. It is like trotting after a will-with-a-wisp, which might decoy even a man of "Arbuthnot's" acuteness into a quagmire.

2d. Cold is supposed to be a stimulus because it occasions paleness of the skin, cutis anserina, and a rugous state of the scrotum.

But surely, Dr. "Arbuthnot," cold may produce all these effects without being a stimulant. By weakening the force of the circulation, a paucity of blood and fluids would necessarily accrue in the capillary vessels of the skin, thereby producing a paleness of the common integuments ; and cutis anserina would be formed from the shrinking of the membranes, leaving the subcutaneous miliary glands in a projecting and visible state. And, relative to the bracing of the scrotum, it is well known to the anatomist, that elastic cellular membrane composes no inconsiderable part of that organ, and by abstracting a portion of the flaccid and relaxing influence of heat possessed by it in ordinary, cold would thereby very naturally produce a contraction or rugous state of this appendage to the genitals. In this case, however, there is no more vital action or contraction from stimulus and excitability, than there is in the bracing or contraction of a pouch of gum elastic from an exposure to a high degree of cold. But were we for a moment, to promote discussion, to admit that Albinus, Haller, and Alexander

Monro, the elder, laboured under an error in asserting that the dartos was no more than a condensation of cellular membrane, and to grant that this lining substance of the scrotum is entirely muscular as some contend, still nothing worth possessing would be obtained in support of the stimulating operation of cold.

Cold and warmth, it is well known, occasion diametrically opposite effects when applied at different times to the scrotum. While the former produces contraction in the supposed muscular fibres of the dartos, the latter occasions a relaxation in the same parts, therefore they cannot both be stimulants. Either the one or the other must be a sedative, as their modes of action are so opposite. Universal experience asserts warmth to be a stimulus: then cold must be a debilitating agent. But, in order that it shall not be said that I suffered my fondness for "the strict accuracy of logical reasoning" to get the better of my politeness, I will, out of mere compliment to "Arbuthnot," alter the proposition. We will then say that universal experience asserts cold to be a stimulus; therefore, pursuant to the premises, *warmth* must be a *sedative*.

Prithee, "Arbuthnot," what kind of philosophy is this?

Twist it about, with the implement of reason, as you please; institute one proposition, then discard it, and substitute another in its place; still the theory of the stimulating operation of cold, and the muscularity of the dartos will, notwithstanding this polite accommodation, plunge us into the greatest inconsistencies.

Well might Galen or some other ancient writer say, "*ars nostra conjecturalis est*," when he himself was capable of conjecturing that cold was a stimulant.

3d. The doctor's third reason in support of his doctrine, is founded on the fact, that an exposure to pretty severe cold produces shivering and muscular exertion. He asks the question as usual, can a sedative produce muscular exertions? I answer, it cannot by its own inherent agency, but it may by the aid of a well-known law of the animal economy, which "*Arbuthnot*" may recollect has been so ably pointed out, and so handsomely descanted on, by the author of the *Zoonomia*. The shivering, and the muscular exertions alluded to, are directly excited by the sensation and the pain of cold, and not by the bucket of cold water in which the feet are immersed. Or, to use the words of Dr. Darwin, "the voluntary exertions of the subcutaneous muscles are excited to relieve the pain occasioned by the torpor of the fibres exposed to cold." I am willing to grant that these causes of vital action are of a stimulant character; but my opponent must recollect that the pain and the sensation of cold are beings, or qualities, in my mind, virtually and totally different from the cold water in the bucket. The exertions of the subcutaneous muscles in shuddering from cold, are no more the primary and the sole effects of an exposure to a frigid medium, than the successive convulsive efforts of the pectoral and intercostal muscles and diaphragm, are directly and separately excited by the accidental falling of a drop of common water into the wind-pipe. In both cases, the stimulus to the muscular exertions is an unusual and highly disagreeable sensation, and neither, on the one hand, a stimulating quality of cold, nor, on the other, the drop of water.

“ But a hot or a cold bath, or even immersion of the feet into hot or cold water, equally and instantly produce it.” And what of all that? Suppose it does: the assertion, when granted, proves nothing to “ Arbuthnot’s” purpose. No; I would not grant that it proves a stimulating power in cold, if old Galen himself was to assert it. But, at the end of the paragraph, there is a kind of a maxim, or proposition, laid down, which “ Arbuthnot” no doubt supposed would bear him out in this novel mode of reasoning. A hot bath, which is acknowledged to be a stimulus, and a pretty warm one too, will produce muscular exertion as well as cold. Therefore “ they are both stimulants.” This, to be sure, is a fine sample of “ Arbuthnot’s” “ strict accuracy of logical reasoning.” Query, which of the two is best calculated to promote the objects of science, such reasoning as this, or “ the jargon of medical phraseology?” Blood-letting not unfrequently produces sleep and perspiration; therefore, with this same logical reasoning, it could easily be made to appear, that phlebotomy, “ like antimoniated tartrate of potash, spr. nitr. dulc.” and opium, is a decisive stimulus. The maxim alluded to is certainly, on account of its singularity and novelty, entitled to be reprinted. “ When two causes produce perfectly the same effect, is it not perfectly just to conclude that both act in the same way, and, therefore, that both are stimulants, or both sedatives?” Variations from this rule are so common, that one of an opposite import has long since been proposed, and received the sanction of the scientific of every country. Instead of such a deceptive maxim, it would have been more concordant with “ Arbuthnot’s” seeming love of true and just reasoning, to have been guided by the following:

Opposite causes may produce perfectly the same effects, and different effects may proceed from the same causes, of vital action.

“Arbuthnot” may have found a convenience in his proposition, but it never can answer any useful end in impartial inquiry. By it, almost every sentiment or doctrine, however wild and foreign from the truth, could be established. For example, if identity of effect implies an identity of a mode of action, venesection must be powerfully stimulant, diaphoretic, and soporific, because, in different conditions of the system, it not unusually occasions an increased vigour of the pulse, sweat, and sleep.

4th. The fourth reason assigned in support of cold being a stimulating agent, is deduced from the opposite results of Drs. Currie and Stock’s experiments. The former “found that the pulse of a person exposed to cold, was diminished from eighty-five to sixty-five strokes per minute, becoming firm, regular, and small.” And the latter “found that it uniformly increased in frequency, and diminished in force.” “Of effects so opposite, one at least,” concludes “Arbuthnot,” “must be a stimulant effect.” It is really somewhat unintelligible to me that the experiments of Dr. Stock should be mentioned by “Arbuthnot,” and supposed by him to be as fairly conducted as those of Dr. Currie, and he, therefrom, conclude cold must or “can stimulate.” As Dr. Currie’s report of the effects of cold on the pulse is directly contradicted by the experiments of Dr. Stock, one might suppose that “Arbuthnot” would have suspected that either the one or the other of these gentlemen must have been deceived. One proves by experiments, that cold is a stimulant, and the other equally proves by experiments, that it is a debilitating agent; and a third gentle-

man advocates only the one opinion, and at the same time supposes that both sets of experiments are correct, or fairly conducted. Why, kind "Arbuthnot," I always thought, for any thing to be a stimulant, and at the same time not to be a stimulant, according to "strict accuracy of logical reasoning," amounted to an inconsistency. By the time my ingenious adversary again presents us with an essay of "Observations on Cold," it is presumable he will make up his mind which "of these opposite effects" he considers as the indication and proof of a stimulating property. Then, and not until then, will his fourth argument admit of a more particular examination.

5th. The consideration which his third argument has received, may serve for his fifth, as they are little more than mere repetition.

6th. The sixth reason for considering cold a stimulus, is worded in the following manner: "Antimoniated tartrite of potash, spir. nitr. dulc. and warm water, taken into the stomach, excite sweating. So does a draught of cold water. Are these stimuli or sedatives?" I answer, collectively speaking, they are neither the one nor the other, but, separately considered, it strikes me that the three first articles mentioned are stimulants, and, concerning the last one, I am striving hard to merit "the homage of "Arbuthnot's" highest respect," by proving that it is a sedative. Cold water, when taken into the stomach, under certain conditions of the system, will produce increased perspiration, by relaxing the cutaneous capillaries.

7th. The efficacy of cold water in asphyxia, is deemed an additional proof of its stimulating power, more especially as "the most violent stimuli are necessary to excite action."

“ Arbuthnot” here speaks of the necessity of using the most violent stimuli in asphyxia generally, and, therefore, expresses an opinion in contradiction of not only just impressions of the pathology of that morbid state of the system, but in direct opposition to the most approved and successful modes of practice of the present day. Relative to suspended animation from drowning, it is true, authors are somewhat divided. A few recommend the use of violent stimuli, but there are many, who rank high in their profession, that denounce this practice, as calculated to destroy, rather than cherish the feeble remains of vitality. But it is desirable to know the page and volume of that work which acquainted “ Arbuthnot” with the efficacy of the most violent stimuli in asphyxia, from either excessive cold, or from fixed air. It is reasonable to suppose that the use of violent stimuli, in either great direct debility, as in the former case, or in an oppressed state of the system, as in the latter case, would be followed by consequences at once fatal to the patient, and the reputation of the physician. The ingenious experiments of Dr. Johnson, contained in his inaugural thesis, prove that fixed air acts, on the body, with the force of a powerful stimulus, in producing apoplexy and suspended respiration. The method of treatment should, of course, be aimed at the diminution of the undue quantum of stimuli which oppressed the system. And, to accomplish that object, I am sure, even “ Arbuthnot” would “ offer the homage of his highest respect,” of infinitely more value than a gold medal prize, to that man who would discover better remedies than cold water, bleeding, cupping, and other debilitating agents hitherto in use. And, as it will be following a good example, to offer compliments as a premium for great and unusual discoveries, I too will offer the homage of my highest respect to that man, who will produce a single well-attested example of a revival from suspended vital action, occa-

sioned by either excessive cold, or fumes of charcoal, by the use of such powerful stimuli “as coals of fire, electricity, and many others.”

8th. “A moderate degree of cold produces exhilaration; an increased degree, thirst, delirium, sleep, and death. Opium, according to its dose, produces precisely similar effects. How do they differ in their *modus operandi*?” I answer, contrary to what one would imagine from “Arbuthnot’s” philosophical maxim, they produce precisely similar effects, by very opposite modes of operation.

9th. “Cold applications excite absorption: witness the practice of surgeons, in the treatment of ecchymosis and other effusions. Frictions, mercury, and other irritants, are also used for the same purpose. Do not all these stimulate the absorbents?”

Venesection promotes absorption: witness the practice of some of our first physicians, in the treatment of dropsy, and other effusions. Does not blood-letting stimulate the absorbents?

10th. “Cold stops hæmorrhage;” therefore “Arbuthnot” concludes it must be a stimulus. Venesection has, in a thousand instances, or more, put a stop to the most alarming hæmorrhages. All other styptics are confessed to be stimuli, why is not blood-letting?

In the estimation of “Arbuthnot,” the circumstance of cold not increasing the pulse, is no well-founded objection to its being a stimulant. But this was not touching the difficulty in question. Though the fact of its not increasing the pulse

may not be incompatible with its character as a stimulus, yet the certainty which has been established by various experiments, of its directly reducing the force of the circulation, like rest, low diet, venesection, &c. completely sets at defiance all his logical acumen to prove that it is an excitant. Can my ingenious adversary mean that light, sound, and sugar cannot, when used in sufficient force, and continued a sufficient length of time, increase the strength of the circulation? If he does, he is most assuredly mistaken. But perhaps his true meaning is, that a gentle brush or scintillation of light, a moderate undulation of the air, and a few grains of sugar, applied to their appropriate senses, do not increase the pulse; nevertheless they are acknowledged to be stimulants. And, if this be a correct exposition of what he had in view, it may not be amiss to acquaint him that he might have said the same thing of opium, camphor, or alcohol, though they very justly occupy a conspicuous station among the decided excitants of the pulse.

“ I take the liberty, in concluding this very hasty production, to request, that if it should be honoured with a reply, theory and speculation may not be considered as fact, and that the jargon of medical phraseology may not exclude the strict accuracy of logical reasoning.”

A Catalogue of some American Minerals, which are found in different Parts of the United States. By ADAM SEYBERT, M. D. member of the American Philosophical, and of the Royal Societies of Gottingen.

Philadelphia, July 16th, 1808.

FROM the inquiries which are daily made by many of my fellow-citizens, and from the numerous applications of foreigners, who desire to have specimens of American minerals, I conceive it will not be entirely a useless task to commence a specification of the names of such as have been found in the vicinity of Philadelphia.

I do this the more readily, as the accounts we have by Gronovius, in his "*Index Supellectilis Lapideæ*," published as early as 1740, are far from being such as are to be depended upon, and as his localities are very vague, and much too general. Indeed we have reason to suppose, from the state of mineralogical science at the time he wrote, that many substances have been misnamed; for it is only within a few years that mineralogy has been cultivated with precision and advantage in Europe; with regret I mention that it has been almost totally neglected in the United States.

I conceive, that the indications which I shall furnish will convince those who are already well-informed mineralogists, that we are not so destitute of minerals as they may have been led to imagine, in consequence of no efforts of this kind having been made heretofore; and to the student of this science, I feel satisfied I shall render an important service, by placing it within his power to form a collection for himself. In this last respect, it may be a matter of some consequence, to individuals

and to our country, for if gentlemen will search to make collections for themselves, they do not simply acquire the specimen, but they, at the same time, observe its *geological* situation: thus may we ultimately be led to form a correct *geological map* of our extensive country; this only requires the united efforts of a few of our citizens, who are already competent to the task.

I do not mean to attempt any thing like a *complete description* of the minerals we will notice: this is reserved for another opportunity.

The names which will be adopted are the English of Kirwan, the French of Haüy, and the German of Werner. I think it well to give these different names, for thus will there be less risk of being misunderstood, and the information communicated may be thereby more diffused.

It is proper for me to remark, that specimens are in my collection of all the substances noticed in this catalogue.

1. *Rock crystal*. K.
- Quartz hyalin*. H.
- Berg crystal*. W.

It is often colourless and perfectly transparent. Sometimes the prism has but one *pyramidal* termination; at other times, this is the case at both ends. They vary from minute to very large, and are abundantly found in various parts of the United States. We have them in Delaware, Montgomery, Northampton, Northumberland, Berks, Lancaster, Franklin, and Tyoga counties, Pennsylvania. They are by no means uncommon in Virginia, Kentucky, and Connecticut.

Fragments of crystallized quartz, which are rolled, transparent, milky, and coloured, are found on the banks of our rivers, and on the beach bordering on the Atlantic. We have specimens of this kind, which, to say the least of them, equal, in transparency and beauty, those brought from the Brazil coast.

Very regular dodecahedral crystals, formed in consequence of the junction of two pyramids at their base, without any intervening prism (Plate XL, Fig. 1, of Haüy), are found in Franklin county, Pennsylvania. In the crystals of this locality, we have every grade of variation, as respects the form. Twin crystals are by no means uncommon.

I have one specimen of transparent crystallized quartz, which consists of an hexangular prism, terminating at each end with six minute and distinct hexagonal pyramids. It was found in Virginia.

Masses of semitransparent colourless quartz, with numerous and well defined cubic impressions, which might give rise to secondary forms, are found in Chester and Lancaster counties, Pennsylvania. Specimens, whose cavities are filled with cubic sulphuret of iron, have been found.

I found one specimen of stalactic quartz, and another of *hackley quartz* (*gehackter quartz* of the Germans), at the mine near the Perkiomen creek, Montgomery county, Pennsylvania.

*a. Morion. K.**Quartz hyalin enfumé. H.**Rauch Topaz. W.*

Single crystals and groups of them are found in Delaware county, near Chester creek. Amorphous specimens of this variety occur in Chester county, and it is found of exquisite beauty in the neighbourhood of Hanover, Lancaster county, Pennsylvania.

*b. Amethyst. K.**Quartz hyalin violet. H.**Amethyst. W.*

Some beautiful specimens have been found in Delaware county, near the Brandywine creek. They are in the form of single crystals, and consist of an hexangular prism, with a pyramidal termination at one end. The colour varies from a light to the dark violet. They are transparent.

I have seen some beautiful specimens, which were found in Berks county, Pennsylvania.

*2. Common quartz. K.**Quartz hyalin amorphe. H.**Gemeiner quartz. W.*

Large masses, which differ as to whiteness, transparency, texture, and hardness, lie scattered on the surface of the fields, in all directions. It is needless to specify the particular spots.

Large masses of amorphous blue quartz, which in many instances appears as the transition to calcedony, lie scattered on the surface near Red Lion square, Chester county, in the neighbourhood of the Yellow Springs, in the same county, and about Abingdon, Montgomery county, Pennsylvania.

There are specimens of amorphous milky quartz, scattered on the surface of the fields, fourteen miles west of Philadelphia, in Chester county, which may be readily separated into very thin laminæ. They are not in the least elastic.

3. *Calcedony*. K.

Quartz agathe calcedoine. H.

Chalcedon. W.

Amorphous, colourless calcedony is often thrown up by the plough, in the grounds adjacent to Trenton, New Jersey.

4. *Semi-opal*. K.

Quartz résinite commun. H.

Halb opal. W.

Considerable masses of semi-opal, of a blueish grey colour, are found imbedded in granite, at the falls of the river Delaware, near the Trenton bridge. Its transparency is much increased by immersion in water.

This mineral, of a leek green colour, and opaque, lies imbedded in serpentine rock, Upper Merian township, Montgomery county, Pennsylvania.

That variety of agate, usually termed *fortification* agate, is found in Green-Briar county, Virginia.

5. *Flint*. K.*Quartz agathe pyromaque*. H.*Feuerstein*. W.

Large masses of common flint are found near Easton, Northampton county, and near Reading, Berks county, Pennsylvania. Rolled flints are common on the banks of many of our rivers.

6. *Hornstone*. K.*Roche cornéenne*. H.*Hornstein*. W.

Considerable masses of a greenish grey-coloured hornstone, with cubic sulphuret of iron imbedded in it, lie scattered on the South Mountain, five miles from the Sulphur Springs, Adams county, Pennsylvania.

7. *Woodstone*. K.*Quartz agathe xyloide*. H.*Holzstein*. W.

Agatized wood is found in the pine barrens, New Jersey, near Cape Henlopen, Delaware, and in Ann Arundel county, Maryland.

8. *Garnet*. K.*Grénat*. H.*Granat*. W.

The common garnet crystallized, in some instances, so as to present twelve rhomboidal, and in others twenty-four trapezoi-

dal planes, is found imbedded in *micaceous shistus*, eight miles north of Philadelphia, east of Germantown, and also west of the Wissahicon creek ; in *granite* on the banks of the Schuylkill ; and in *granite*, near the town of Chester, Delaware county, Pennsylvania. They are found from very minute to such as weigh but little less than four ounces. The same are found near Chesterfield, Massachusetts, and near Bolton, Connecticut.

Rolled garnets are common on the borders of the river Schuylkill, four miles north-west of Philadelphia.

Very handsome black *trapezoidal garnets* are found in the *granite* which abounds near Germantown.

I have a single specimen of Haüy's *grenat émarginé*, from Albermarle county, Virginia.

9. *Zeolite*. K.

Mézotype. H.

Zeolith. W.

Radiated *zeolite* is found investing hornblende rock, on the canal near the river Schuylkill, about three miles and a half from Philadelphia.

10. *Beryl*. K.

Emeraude. H.

Beryll. W.

This mineral is found in the *granite* of Chesnut-Hill, and in that brought from Ridley creek to this city, for the purpose of building cellar walls, &c. I have received a specimen of

this mineral from Maryland, which far surpasses the former in hardness: it much resembles some specimens from Brazil.

In all the above instances the *beryl* is crystallized in the form of hexangular prisms.

11. *Tourmalin*. K.

Tourmaline. H.

Turmalin. W.

Both the *shorl* and *tourmalin* of authors are found abundantly in the neighbourhood of Philadelphia; some of which are of considerable size and beauty. They occur in *granite* at Sheridan's ferry, on the Schuylkill; in that of Germantown and Chesnut-Hill; also in that near Ridley creek, Delaware county, and in Chester county, Pennsylvania. Some elegant specimens have been found, in amorphous quartz, in Delaware county, Pennsylvania; near Elkton, Maryland; and near Boston, Massachusetts.

12. *Hornblende*. K.

Amphibole. H.

Hornblende. W.

Different varieties of this mineral abound in the United States. We have the *indeterminate* in Philadelphia, Delaware, Chester, and Lancaster counties, Pennsylvania; in Morris county, New Jersey; and near Troy, in the state of New York.

Considerable strata of the *fibrous* occur near the falls of the Schuylkill, five miles north of Philadelphia.

To be continued.

A Case of Tetanus, successfully treated with Mercury and Cold Water. By JOSEPH KLAPP, M. D.

Preliminary Remarks on combining Theory with the Practice of Medicine.

I HAVE sometimes heard gentlemen, both theorists and practicalists, undervalue the worth of medical publications, because they contained more theory, or relation of practice, than was calculated to please their respective and opposite turns of mind. And, in a few instances, I think, I have perceived something like envy manifested, and slander used to depreciate each other's method of cultivating medicine, and thereby to stamp on their own peculiar course of inquiry a stolen air of importance, and a display of orthodoxy, not in reality their own.

The imputations of he is a fanciful theorist, and he is a dull or dogmatic practicalist, are, now-a-days, by far too common.

Such a fashion as this must retard the cultivation of science, and, if persevered in any great length of time, may bind its devotees in the fetters of prejudice and ignorance. Theory, without practice or experience, is a floating bubble, which, with inflated grandeur, may serve to catch the eye, or the fancy, until its momentary form or existence bursts into airy nothing; and practice, without the guide of science, is downright jargon or empiricism. The anticipated temple of medicine, which is to constitute the ultimatum and the pride of our art, cannot be built until the nail of physic be properly driven, and

the permanency of the work must much depend on the quality of its materials. Useful knowledge can only grow out of a judicious combination of the labours of the theorist and practitioner.

The epicurean could not relish the favourites of his palate without they were flavoured with pepper and salt; and the mental epicurean, who would partake of the practice of medicine without the pepper and salt of theory, must be possessed of internal senses too rude and easily satisfied to be capable of any great expansion of intellect. Therefore, to make the banquet both substantial and grateful, let the practice be skilfully peppered and salted with the theory of medicine.

THE subject of the following communication is the relation of a case of Tetanus.

On the 10th of May, I was requested to visit a boy in Penn-street, who was much indisposed with what his father called a convulsive affection. The disease was found to partake of that character to an alarming degree. It was a confirmed case of tetanus, accompanied with alternate rigid contraction and partial relaxation of the temporalis and masseter muscles, presenting something of an example of a clonic trismus.

The history which I obtained from the family of the imputed cause and the primary advances of the disease, will initiate the reader into a more perfect understanding of its true character, than can well be derived from any account which I could give of the aspect and symptoms of it, when I first saw the pa-

tient. For some weeks prior to his being taken seriously unwell, he had been troubled with an obstinate phagedenic ulcer on one of his feet. It had formed without any visible cause which could be assigned, and resisted all the common plasters and unguents which are generally used on such occasions. At length an ointment of a particular composition was recommended by a neighbour, and applied with the desired effect of restraining the discharge, and closing the ulcer. The boy, however, was not thereby benefited, for symptoms soon occurred which manifested that the local affection of the foot was exchanged for a dangerous systematic disease. In a short time, something of a stiffness and uneasiness was complained of about the jaws, with an increasing inability to masticate his food; and, almost coeval with this affection about the jaws, a considerable degree of stiffness was induced in the muscles of different parts of the body, but particularly in those of the lower extremity on the left side. As often as four or five times during the day, and more frequently during the night, a violent pain in the scrobiculus cordis would occur, and which, in every instance, was a certain precursor of a paroxysm of spasmodic contractions in the muscles of the neck, trunk, and extremities. During the intervals of these paroxysms, the lad would seem pretty well, and, being naturally of a quiet and contented disposition, he would hobble about the house without making any particular complaint. In this situation, but sensibly growing worse, he had been for four or five days previous to my seeing him.

Having made up my mind concerning the character of the disease, I next began to deliberate on the course of treatment which should be pursued. Reasoning, *a priori*, on the particular nature of the disease, from what I had met with in practice, and from published accounts of the success of different reme-

dies, I was sensible of a decided prepossession for a salivation, over every other remedy yet proposed. The short protest of Dr. Moseley against the practice was not forgotten, but the authority in its favour was deemed at once so respectable and decided, as to induce me to venture on its use. He notices a salivation in this disease in the following words: "If it be urged that the application of mercurial frictions is an invention of the moderns in this disease, I answer, it is my opinion that mercury used in the tetanus *has killed more people than it has cured*. And further, that I suspect those who have recovered when this remedy has been used, would have *recovered without it*; for many people have been attacked by the tetanus, in the West Indies, under a course of mercury."

The doctor's experience with this remedy certainly differs in no small degree from that of several eminent physicians, both in this and other countries. Perhaps climate and some peculiarity of circumstances may account for this great variance in medical experience. But when the abruptness and apparent warmth with which Dr. Moseley expresses himself on this subject is adverted to, one might feel himself half inclined to suspect, that the use of mercury in tetanus has been opposed on grounds not altogether scientific and dispassionate. He certainly passes over its consideration in a manner more brief and positive, than a remedy of such reputed efficacy and powers, in the most of diseases, would seem to deserve. But it must be recollected that Dr. Moseley is a practical man, and therefore may be entitled to speak with such conclusion and certainty.

Agreeably to the course of treatment which appeared to me most conducive to the recovery of this particular case of tetanus at any rate, I began with a mercurial purge, to obviate a confined state of the bowels, and produce a tendency in the

system to the meditated ptyalism. After the alimentary canal had been freely opened, nine ounces of blood was taken from the arm, to lessen the force of the pulse. To change the condition of that spot which was the alleged inlet of the disease into the system, caustic was very plentifully applied, and the foot enveloped in an emollient poultice. The next day, on the 11th, when I renewed my visit, the disease was found pretty much in the same state as the day before. The application to the foot, on the spot which had been the seat of the ulcer, had produced some inflammation and corrosion of the flesh. The pulse still continued active, and the loss of nine ounces of blood was again ordered. Two grains of calomel were prescribed to be taken, in the form of pills, three times a day. The caustic was renewed, and also the poultices. The spells of convulsions were this day more alarming.

12th. The disease was still progressing, and the paroxysms of longer duration and more frequent recurrence. This day, during a contest between the muscles on the anterior and posterior parts of the trunk, and the flexor and extensor ones of the extremities, the patient was completely thrown out of bed; and, for the compass of about half a minute, his body presented a strong example of that form of tetanus called by authors *opisthotonus*. His breast and neck were forcibly thrust forwards, and his head and arms, with his hands firmly clinched, were drawn backwards. On the first invasion of the disease, his countenance lost its natural figure, but on the accession of the convulsions it was very commonly distorted into a *risus sardonicus*. After the second bleeding, the pulse subsided full as much as was deemed consistent with the welfare of the patient. From being rather full and active, it became small and frequent. The jaws were closely locked during the paroxysms, but, in the intervals of the convulsions, they could be

opened a little, so as to admit into the mouth drinks and medicines.

As the caustic did not produce that discharge from the foot, or the degree of inflammation which were conceived necessary, I placed a blister over that part where it had been applied. Calomel pills to be continued, and three ounces of ung. hydrarg. fort. to be rubbed on the arm-pits and shoulders, in twenty-four hours. To promote the diffusion of mercury through the system, a coarse linen band, with ung. hydrarg. fort. spread on its internal surface, was ordered to be constantly worn about the jaws, in such a way as to pass up over the ears, and fasten on the top of the head. It appears to me that a mercurial linen, or soft leather band of this description, is a contrivance which is entitled to future attention from practitioners. The air inhaled through the mouth of the patient will by it be impregnated with the vapours of the mercury, and the system must thereby be speedily charged with the medicine. In this way it will doubtless materially forward a salivation.

13th. No better; the paroxysms very alarming, and attendants seem convinced that his misery cannot be protracted much longer. The intervals of relief from the convulsions are of less continuance than at any previous period. The pain in the region of the stomach appears almost insupportable. During my visits of to day, he was very severely handled with two or three paroxysms of universal convulsions, and I availed myself of this opportunity to make observations on those changes of his countenance and pulse, which preceded and followed the convulsions. A paleness of the face, a lividness of the lips, a thread-like pulse, and a violent pain in the scrobiculus cordis, were in every instance the common precursors of the paroxysms; and, on the cessation of the convulsions, the counte-

nance resumed something of its colour ; a period of relaxation, amounting almost to fainting, with a great degree of flaccidity in the flesh, ensued. In this condition of the syst m, although muscular strength appeared nearly exhausted, I constantly found a degree of force and fulness in the pulse, which did not occur in any other state of the disease.

These premonitory and succeeding symptoms of the paroxysms, would seem to favour that theory of authors, which supposes a libration or fluctuation of excitement between the muscular and vascular systems, to constitute the nature of tetanus. In all probability, tetanus, and every other disease incident to the animal body, consists of partial, and not of general morbid excitement. The great Brown paved the way to an important discovery in pathology, when he drew the attention of readers to the elevation and sinking of excitement in diseases ; but, like many other original geniuses, and liberal improvers of the medic art, he travelled far with bold and rapid strides on the right road, yet, by some treacherous guide of ideas, he was doomed to be led astray just as he was treading the threshold of truth. In every disease there is certainly a sinking or elevation of excitement, but this departure from healthy action does not appear to consist of that change in the general quantum of vital action which Dr. Brown defines it to be. Speaking of the living system collectively, perhaps daily experience can furnish impressive examples of diseases in which the degree of excitement is neither more nor less than that of the most perfect health. In health, the movements of the animal frame are in concert and harmony with each other, but in disease, they are crooked and irregular.

The blister produced a pretty copious discharge from the foot, and the frictions with the mercurial ointment were directed to be continued.

14th. The boy was this day sensibly worse in every respect. The medicines were still persevered in, with the addition of an anodyne draught at night.

15th. The foot was dressed with an ointment of cantharides. Mustard poultices were applied to the wrists, and a blistering plaster on the region of the stomach. There were scarcely ten minutes together, this day, when it could be said he was clear of spasms or convulsions in some part or other of his body. To the inventory of his sufferings was added a strabismus, and an occasional difficulty of breathing. On some occasions I thought something like delirium could be discerned ; but on this point I am not quite certain. I may have been deceived. At length a ptyalism was announced by a fluxion of saliva, and a fœtor of the breath. The mercurial remedies were discontinued.

16th. The mouth was becoming very sore ; but the salivary discharge was not as copious as might have been expected. The disease did not appear to have yielded in the least.

17th. The situation of the patient seemed much the same as the day before, and, on leaving him on the afternoon of this day, I acquainted his parents, that, in my opinion, it was extremely doubtful whether he would live until next morning.

18th. I was agreeably disappointed in finding him rather better. The convulsions were less frequent and less severe. His face presented a scarlet complexion, from the tumefaction

of his cheeks, and the inflammation of the mouth. In the evening I found the tetanus still retreating before the powers of a salivation.

19th. By invitation, Dr. Rush was so obliging as to visit the patient with me this day, and the result of our conference was a determination to associate with the salivation the use of cold water. We were led to this remedy by the reputation which it has obtained in the cure of tetanus, and by the existence of those particular symptoms in the case, which are considered very favourable to its use. Linen sheets were dipped in buckets of pump water, whose coldness was increased by mixing with it culinary salt. These sheets were applied so as to envelope the whole body of the patient. The boy was wrapped up in this manner for about one quarter of an hour: the sheets were then removed, and, after wiping him quite dry with some soft flannel, he was again removed to his bed. The first time this remedy was used, the lad was sensibly benefited. It evacuated the febrile heat from the surface of the body, and produced a very general and a very refreshing perspiration. The sheets were repeated twice this day, and with equal utility. The remedy operated like an anodyne, in composing the agitation of the muscular system, and producing kindly sleep, which had not before been experienced for some time. Thirty drops of liquid laudanum were ordered to be given in the evening, and, to allay a troublesome spasm which now and then fell on the bowels, an opiate enema was exhibited.

20th. Continues better. Has had only two slight paroxysms of convulsions this morning. The salivary fluxion from the mouth is very profuse, and the violence of the inflammation occasioned by the mercury, and the tumefaction about the jaws and face, seem considerably abated. The inflammation first

produced in the mouth appeared to exceed that particular degree at which a free discharge of spittle takes place, and the cold water, which was applied with napkins, and in the form of lavation to the face, had the effect of reducing it down to a point of excitement which was favourable to secretion. His naked body was wrapped in the sheets of cold water four times this day, and in every instance gave such decided relief as to dissipate from the mind of the patient, though a child, all antipathy or dread. The anodyne enema proved successful. Thirty drops of liquid laudanum to be given on returning the patient into bed, after the last application of the water this evening.

21st. Has had no return of the convulsions since yesterday morning. Seems much composed, and, comparative with the last few days, is pretty free from pain and uneasiness. The bowels being somewhat confined, a laxative glyster was ordered. The water was applied the same as yesterday. Since the patient's case has taken this favourable change, the pulse has become regular, fuller, and, of course, less frequent.

22d. This day the mercurial fever seems completely triumphant over the tetanic affection. There has been no return of the convulsions, and the jaws appear to labour under no restriction or difficulty but what may be imputed to the salivation. The violent pain in the scrobiculus cordis has disappeared with the convulsions, and the patient's sensations generally are much altered. The pulse is somewhat accelerated, and the swelling of the face is this day increased. The fluxion, however, of saliva tinged with blood still continues profuse. To abate the heat in the mouth, and the tumefaction in the face, napkins of cold water were ordered to be constantly kept about the jaws. The more general application of cold water was continued as before, and, provided the febrile heat of the skin and the un-

easiness of the patient are removed or lessened by the last application of it this evening, thirty drops of laudanum to be taken.

23d. I was this day convinced that the state of my patient's system had experienced a very considerable change for the better. Excepting an occasional spasm of a moment's duration, in different parts of the body, he does not appear to labour any longer under either tetanus or locked jaw. Though the ulceration of the mouth is considerable, and though his face still continues much swelled, yet he can now open his jaws and speak pretty well.

The napkins of cold water, which were directed to be applied to the face, had the desired effect of lessening the heat and uneasiness of the mouth and throat ; and, in addition to which, the swelling and hardness of the cheeks were thereby much abated. As the remedy was comfortable and desirable to the patient, it was ordered to be liberally continued, and also to allow him to wash his mouth often with cold water. To open the bowels, senna and manna were ordered. The evening anodyne was continued.

As his only complaint, at present, appears to be that which was intentionally excited by me, the further application of the sheets of cold water was discontinued. The velocity of the pulse, and the uncomfortable warmth of his body, are less than yesterday. This morning he asked for food, but the state of his mouth would not allow of much indulgence to his appetite. To preserve in due subjection the fever from the mercury, which was much disposed to rise into an injurious excess, laxative medicine was given, and twenty drops of spir. nitr. dulc. and antimonial wine, every hour, to produce a cool-

ing and febrifuge perspiration. Alum water was used as a mouth wash.

24th. The state of the patient this day, was what might reasonably be looked for in a progressing recovery. The ulceration and inflammation in the mouth are diminished, but the fætor of his breath, and the fluxion, continue very considerable. No disposition to spasms or convulsions has returned. The faculty of speaking, and mastication, is improving. His pulse is somewhat active to day, but I could not perceive any other visible indication of fever. His skin felt cool, and was softened with a mild perspiration. The laxative medicine made him more comfortable, and less febrile. The diaphoretic drops were continued at longer intervals.

25th. His recovery is happily advancing. Every symptom of both opisthotonus and trismus still is absent; mouth is better; appetite rather excessive; has been pretty freely gratified. For the last night or two, the evening anodyne has rather increased his uneasiness, than afforded the desired rest; therefore ordered to be omitted. Astringent wash for the mouth to be continued.

26th, 27th, and 28th. In a state of advancing recovery; mouth better, and no signs of a return of tetanus. Appetite good; and what is equally conducive to a reinstatement of strength and health, is a good faculty of masticating his food.

As a further history of this case would consist of nothing more than an uninteresting account of the gradual subsidence of a salivation, and as such a detail must be unnecessary, it will now be terminated.

It may, however, be proper to add, that several weeks have elapsed since my attendance on this patient was discontinued, and that, at the present time, he has nearly recovered his ordinary strength and health.

OBSERVATIONS.

In the case which I have just related, there are two facts to which I wish more particularly to call the attention of physicians:

1st. The efficacy of a salivation in tetanus.

2d. The safety of using mercury and cold water at the same time.

Southwark, June, 1808.

*An Account of a Worm discharged by the Urethra. By
J. STUART, M. D. &c.*

CONSIDERED a priori, and abstracted from all observations and records on the subject, the existence of animalculæ in the urinary bladder would appear highly improbable, if not absolutely impossible. No animal with which we are yet acquainted, can live without the all-vivifying principles contained in atmospheric air; and so recluse is the cavity of the bladder from external communication, that we may justly doubt whether its contents are ever visited by this benign pabulum of nature, in a disengaged state or not. An obstacle of no less difficulty is also presented in the extreme acrimony of the fluid which is constantly poured into this sack. But, should we

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



d *e*



turn our eyes a moment to analogical facts, should we consider that animals, apparently, of much greater importance in the scale of animated nature than worms, have been discovered in the centre of large and solid masses of pit-coal, at the distance of many fathoms beneath the surface of the earth, in the middle of the wood of living trees, and even in the heart of solid rocks, whatever difficulty we may find in determining the source from whence they may derive their existence or support, we shall not find the least obstacle to concluding that animalculæ may meet with a congenial habitation in every part of the human frame.

Nor will conclusions drawn a priori meet with less opposition, when we consider animalculæ in abundance are found in various fluids of much greater acrimony than that of the urine of man. Millions of these, of the most delicate structure, are seen sporting away an ephemeral, though a frolicsome and apparently a happy existence, amidst an aggregation of the acrid and corrosive particles of the acetous acid. The stagnant and putrid waters of the lake want not inhabitants, whilst living beings innumerable, of all forms, sizes, and descriptions, glide in safety through the waves of the briny deep. Nor stop we here in support of the doctrine advocated. Should we appeal to direct facts, what a severe reproof will god-like reason meet, when, from the best authority, we shall find the knife of the anatomist has never penetrated that secret recess in the mazy fabric of organic life, which has not, at some time or other, been demonstrated the abode of animalcular existence.

Baglivi tells us of a worm found in the *pericardium*; Senac of one in the ventricle of the heart; and Du Verney of one in the brain; while Aduanus Spigilius gives testimony of one dis-

covered even in the *vitreous humour* of the eye itself; and to these, were additional facts required, hundreds of observations might be added to the same effect*.

But considering it unnecessary to detain the reader any longer with facts he must frequently have met with before, I shall willingly dispense with all further quotations, to proceed to the subject of my own observations, in a case of a worm discharged from the URETHRA.

T. B——, aged 12 years, on the 30th day of May, 1805, was attacked with the usual symptoms of pyrexia. Soon after the establishment of fever, he was attacked with an acute pain in the left side of the thorax, which was accompanied with a severe and troublesome cough. His face was flushed; his eyes watery and inflamed; his tongue was white, and exhibited the general appearances observed in inflammatory fever; the breathing was oppressed and laborious; the skin was dry, and the heat intense; the pulse was active, chorded, and strong; his intestines were costive; complained of lancinating pains in the abdominal region, while his stomach was now and then disordered with a deathly sickness, without any disposition or effort to vomit. On being raised up in an erect posture, he never failed to evidence the greatest prostration of strength.

These symptoms evidently indicated an affection of the pleura, combined with an increased determination to the abdominal viscera; while the indications of cure were so striking and obvious, that were there not room to suspect the remedies employed, of inducing some of the most prominent symptoms

* See American Philosophical Transactions, Vol. 2, for an account of a worm in a horse's eye.

in the course of the disease, which were afterwards proved to depend upon the exciting cause, the treatment might, with the greatest propriety, be passed over in silence.

Bleeding, refrigerating and stomachic medicines, such as *spiritus mindereri*, with diluent drinks, were first prescribed, and the former frequently repeated until the 4th of June, without the relief generally expected under similar circumstances of disease. The intestines being rather torpid, and the anorexia ceasing, a dose of calomel and jalap was prescribed with some relief. The pain, however, notwithstanding the frequent bleedings, still continued with little palliation, while the fever raged at intervals with nearly the same violence as on the first aggress of the disease, until the morning of the 4th, when the same purgative medicine was repeated, and at night an epispastic applied to the side affected. On the morning of the 5th, the symptoms were much alleviated, but the patient complained of a dysuria, which almost amounted to a total suppression.

This part of his complaint being attributed to the operation of the cantharides on the urinary organs, demulcent drinks, with occasional doses of *spir. nitr. dulc.* were prescribed to be taken internally, and the region of the bladder to be frequently bathed with camphorated ointment. On the morning of the 6th, I was much gratified to find my patient had passed a salutary crisis about seven o'clock of the evening before, while, to my great surprize, I was presented with a glass urinal containing the WORM, from which was taken the annexed engraving. I was informed by the nurse, this insect was expelled suddenly, with the usual stream of urine, from the URETHRA; that thereon the suppression, and all the symptoms of disease before present, suddenly disappeared.

Although, in the course of my reading, I had often met with cases of worms discharged from the urethra, yet, under my own observation, a case of this kind, attended with symptoms of pleurisy, was singularly novel; whilst a recollection that the existence of worms in the urinary bladder had been much contested, proved an additional stimulus to make every inquiry calculated to satisfy the curious, and to dispel such doubts as scepticism might affect to raise. As the contents of the bladder had been received immediately from the urethra, in an urinal of the ordinary construction, there was not the least reason to suppose the worm could have been introduced from an external source, while the suppression of urine preceding the copious discharge immediately following the appearance of this little animal in the urinal, fixes its origin beyond all possibility of doubt in the bladder of urine, or the kidneys.

It has been pretty generally received, and probably in some instances well ascertained, that those bodies passed by the urethra, and taken for worms, have, upon further and more accurate examination, proved nothing more than a quantity of coagulable lymph, effused by excessive action into the kidneys, and by the ureters moulded into that form under which they were discharged. But these could never have taken on motion and other characteristics peculiar to animated beings, much less the form exhibited in the annexed engraving; whilst the subject of these observations afforded phenomena of life and motion for several hours after it was ushered to the light, and, as is here seen, presented to the eye of the spectator very perfectly the form of organic matter. It partook of a pale flesh-colour, and, at the first view, very much resembled the teres commonly found in the human intestines. More close examination, however, showed it to be firmer and more elastic;

the form was more slender and delicate, while the skin wanted that transparency which in these gives the eye an opportunity of scrutinizing the various convolutions of the intestinal canal, and the intricate and very extraordinary structure of the sper-matic vessels*. When subjected to the prying powers of the microscope, it exhibited more of the general outlines of those worms found in the intestines of calves, and so accurately described by the learned and ingenious author just cited. One end terminated, more abrupt than the other, in three spherical tuberosities, the surface of which afforded to the eye, assisted by the microscope, a fungous and somewhat granulated appearance. These, in that point of their peripheries most remote from the common centre, described a triangular figure, whilst in this centre was seen an orifice of the same form, which is conceived to be the beginning of the œsophagus or mouth. Of these tuberosities, one was nearly as large as the other two, and seemed to form a counterpoise to them. On the external periphery of this, and near the points which came in contact with the other two, were discovered two extremely minute and shining black spots, which, from their position, and from the uniformity and regularity of their appearance, were supposed to be eyes. In this observation, notwithstanding the assertion of the learned and ingenious Vallisnerus, I do not stand alone; Le Clerc, Redi, and many others of equal eminence and acumen, all concur in having observed, in the Teres both of men and calves, what they supposed to be eyes.

The other extremity terminated in a hook-like point, which, with the back of the worm towards the spectator, seemed a regular continuation of the body; but viewed in profile had more resemblance to the nail or claw on the end of the toes

* Vide Redi.

of the Gallinacea. At the origin of this projection, and between it and the protuberance answering to the end of the toe, were seen several rugæ, radiated and diverging from a common centre, which last proved to be the origin of a second cavity leading into the body, and which may be supposed to be the anus. Many inquisitive and learned naturalists concur in having observed in the *teres* a third orifice. They inform us this is situated in the under part or belly, at the distance of about one-third of the length of the insect from its head; and is so patulous, as when once descried by the microscope, to be easily perceived by the naked eye; and this, it is conjectured, is appropriated by nature to the exclusive purposes of love and the propagation of the species. Of the accuracy and correctness of the observations of such naturalists, very little doubt can be entertained; but whether it should be attributed to the minuteness of the subject of my observations, to its imperfect formation, or to the too weak powers of a powerful microscope, this orifice has effectually eluded every attempt of mine for its discovery*.

The circumstance in this case most calculated to arrest the attention of the practising physician, is the assemblage of symptoms preceding the expulsion of the worm. Irritation upon different organs, from the various existing sympathies between these and other parts of the same system, are known to exhibit a train of symptoms of a peculiar character, according to the organs or parts primarily acted on. A puncture under the nail produces pain and swelling of the lymphatic glands in the axilla of the same side; worms crawling in the *stomach* produce an itching of the nostrils, dilatation of the pupil, and frequently vertigo and syncope. Riverius, Bianchi, Schenckius,

* It is believed that the orifice above alluded to, is only seen during the season of the amours of these classes of animals.

de Meyserey, and Marteau all bear testimony they have seen a pleurisy produced by the same cause ; while the learned Sauvages tells us he has often witnessed the same occurrence. "*Frequens*," says he, "*est hæc pluritis apud pueros ; dolor est lateris punctorius, sæpe ad costas infimas, cum tussicula sicca, quandoque suffocativa, ut in amphemerinâ quintâ dictâ (vel coqueluche) ; pulsus durus, respiratio difficilis, quandoque singultus, genæ nunc calent et rubent, nunc frigent et pallent. Hic morbus frequens mihi occurrit et sanatur, sine phlebotomia saltem repetita, leni emitico, catharticis, et vermifugis, non neglectis bechichis.*"

But that symptoms of inflammation in the pulmonary organs should occur from any irritating cause in the *kidneys, ureters, or bladder*, can scarcely be accounted for by any acknowledged sympathy in the animal economy. It is true Aretæus, in his description of the symptoms arising from the descent of a stone from the kidneys, has made some remarks which may lead to the belief that he had met with pleuritic symptoms from such irritation. "*Quod se aliquando grandior effectus*," says he, "*lapis concavo renis inhæserit, hunc dolores lumborum, circa musculos quos psoas appellant, excitantur, et ad medias usque costas perveniunt. Multis certe dolor ille, ac si pleuritis esset, imposuit : preterea gravitas adest coxendicis : autem in ureterem lapis inciderit, concussio corporis fit, ut in rigore : calculi progressus sentitur cum violenta contentione.*" And Baglivi has recorded a case to the same purport.

A young man, of twenty-eight years of age, had for ten months laboured under a difficulty of breathing and pain in the thorax, which were occasionally alternated with paroxysms of vomiting, and a sense of weight in the abdomen. After various remedies had been tried in vain, he at length expired.

Manifest causes of the complaints the poor sufferer had endured were observed ; but, besides these, others were discovered which never had been suspected to exist, and which no ways corresponded with the symptoms of his complaints : for his urine had never deposited any nephritic gravel ; he had never complained of any affection of the kidneys ; nor had ever suffered a suppression of urine. Yet the right kidney was very remarkably enlarged, and of a hardness that approached that of cartilage, insomuch “ that it was with great difficulty it could be divided with the knife, and contained a stone that weighed six ounces, &c. The whole substance of the left kidney had disappeared, and the cells thereof were filled with a greenish fluid.” But since in the case, fever, cough, and the various symptoms which constitute pleuritic affection, have not been enumerated by this accurate observer, we may reasonably conclude that the pulmonary symptoms were spasmodic, and consequently of short duration only. And, indeed, should his phraseology be examined with an eye of criticism, it will evidently give the strongest support to, if not absolutely confirm this position : *Multis certe dolor ille, ac si pleuritis esset imposuit.* By this it will be seen it was not the case of the patient ; it was not the general assemblage of symptoms which imposed on many *as if it were* a pleurisy, but *ille dolor*, that pain, or that particular symptom only, *qui multis imposuit.* As the affection of the breast, in the last case, appears to have been of many months’ standing, we may fairly infer it was chronic, while the dissection evidently proves the stone in the kidney was rather an accidental concomitant than the cause of his complaint. Hence, these and such other cases being rejected, it will be seen there is no example of pleuritic affection produced by immediate sympathy between the legitimate seat of the disease and the urinary organs ; consequently, unless we should throw ourselves upon the high-sounding word *Idiosyn-*

crasia, as a reposing place for our ignorance, we shall be compelled to seek some other means for the explanation of the phenomena under consideration. These, it is conceived, will be found eminently conspicuous in PREDISPOSITION and IRRITATION.

That certain causes, acting on the surrounding medium in which we live, so operate as to induce a predisposition to particular diseases at particular seasons, rather than at others, cannot be denied. Hence, in the vernal months, inflammatory affections are most prevalent; whilst at others intermittent, remittent, typhus, and bilious fevers open the most patulent and common outlets to the life of man.

Nor is it less certain that fever occurring from irritation always assumes a character corresponding with the particular diathesis prevalent in the system, at the time when the irritating cause is applied. In confirmation of this, various topical applications, such as blisters, and even leeches, applied to external parts at a time when the general system is under great prostration from the excess of stimulus, are frequently followed by gangrenous fever; and I have lately seen a case, in which a general gangrenous action of the whole system was induced, by the irritation occasioned by cutting the gums of a child, to mitigate the symptoms of dentition. It is also well known that fever once formed, of whatever character it may be, is more disposed to produce topical affection on some particular part of the system, in proportion as that part is under greater debility or excitability, or, in other words, as it is under a greater predisposition to suffer from the commotion excited. In confirmation of this position, almost all inflammatory affections are preceded by pyrexia and general disorder of the whole system, before the patient is sensible of the least topical dis-

ease. Hence, also, a person having been several times affected by catarrh, is ever afterwards, on exposure, more obnoxious to it than he who has never before been affected by that complaint.

From the history of the case, and from the principles here advanced, it appears that the irritation produced by the worm on the urinary organs, acted first by inducing general fever, and that the topical affection was the consequence of the fever determined to a part previously affected by a peculiar susceptibility, or predisposition to disease. Thus, when pleurisies are endemic, any exciting cause inducing fever is almost constantly succeeded by topical inflammation in the seat of that disease.

DESCRIPTION OF THE PLATE.

Fig. 1. Exhibits the worm in its natural size.

- a.* The head.
- b.* The tail.

Fig. 2. Exhibits the same as it appeared under the microscope; which figure, for the accommodation of the plate to the size of the volume, has been divided into two parts.

- a. b. c.* Represent the head, which was composed of globular tubercles; one larger, and two smaller ones.
- a.* The larger.
- b.* The two smaller.
- c.* A triangular cavity, formed by the approximation of the two protuberances before mentioned, in which could be plainly observed a considerable orifice, supposed to be the mouth.
- d. e.* Represent the tail.

- d. The profile of the curious hook-like projection which terminates the tail.
- e. The anus, with a number of rugæ diverging from the contraction of that orifice.

Fig. 3. The head, in which is exhibited a front view of the three protuberances noticed in fig. 2.

- a. a. Show the beginning of the body, or, perhaps, of the neck of the worm fore-shortened.
- b. A front view of the mouth, as formed by the approximation of the three protuberances composing the head.

Fig. 4. Represents a portion of the tail in a front view, with the belly turned towards the spectator.

- a. The anus with the rugæ noticed in fig. 2.
- b. A front view of the hook-like extremity of the tail.

An Account of a Case of Small-Pox after Variolous Inoculation.

By BENJAMIN RUSH, M. D. &c.

ON the 25th of May, of the present year, I was called to visit captain Samuel Cassen, in consultation with Dr. Neill. He had been ill two days with an acute fever, attended with a bleeding from his nose. The doctor had bled him twice, and had purged him freely. We concurred in directing a third bleeding. The next day an eruption appeared all over his body, which I suspected to be the small-pox. He said that was impossible; for that I had inoculated him, twenty-six years before, for that disease, and, as a proof of it, showed me the mark usually left by the pustule on the arm; also two distinct pock-marks upon his leg. To prevent a mistake in this business I called upon his mother, who assured me, that he

had the usual fever and number of eruptions from inoculation ; that he had been exposed to the disease, in her family, at the time his younger brother and sister were inoculated ; and that she never had a doubt of his having had the genuine small-pox. The captain informed me further, that he had often met persons with the small-pox upon them, in the streets of Philadelphia, and that he had once visited a sailor who died with it in the East Indies, and had afterwards assisted in putting him into his coffin.

The pock, in the captain's case, were numerous and sore. They turned rather sooner than is common, but not more so than I had now and then seen them, before the general introduction of inoculation into our city.

The disease was taken from the captain's child, which had been inoculated. He sickened fourteen days after the pock began to turn in his child. One circumstance in the history of this case remains to be mentioned. Between the time the captain received the contagion from his child, and the day upon which he sickened, he had been exposed a whole day to a severe storm of rain on board his ship ; in consequence of which, he had complained of having taken cold, several days before he was confined to his bed. Did this exposure to the storm of rain act as an exciting cause of the small-pox ? and is it not possible that, under other circumstances, he might have escaped it ? That the contagion of the small-pox enters the systems of those persons who have had it, in common with those who have not had it, is obvious from the symptoms of the variolous fever mentioned by Dr. Sydenham, which blended themselves with a fever of another kind, in persons who had had the small-pox in the natural way ; also from the pock which appear in nurses who are much exposed to its contagion. I am not singular in

this opinion. It is admitted by Dr. Adams, in his sensible little work, entitled, "A Popular View of Vaccination, showing the Analogy between Small-Pox and Cow-Pox," in which he has ingeniously, and I believe correctly, explained several of the anomalies of the former disease.

But again : may not the fatigue to which nurses are exposed in attending patients in the natural small-pox, in addition to the large quantity of contagion imbibed by them, be the reason why they are more frequently affected with what are called "nurse-pocks," than physicians, and other more transient attendants upon such patients? Perhaps I should be safe in asserting, they are almost exclusively affected with them.

I submit these facts to the consideration of the enemies of vaccination, and the queries which follow them to the friends of free inquiry into medicine. From the benefit of the former, I shall subjoin an extract from a letter I received some years ago from Dr. Arnott, of York county, in this state.

"In your Treatise on Inoculation for the Small-Pox you allege, that there are certainly cases where there are the most irrefragable proofs of the infection implanted by inoculation being of a variolous nature, where the disorder has been afterwards taken in the natural way ; in these cases, you suppose the variolous matter produced only a topical or cuticular disorder, and that a fever and eruption seem necessary for producing some impression on the whole system, in order to render it ever after incapable of receiving an impression of a similar nature. Of the truth of this I was fully persuaded till last summer, in the month of July, when (unhappily for me) some cases occurred, which I confess stagger me a good deal, and

have exposed me to a very great deal of country clamour. Permit me, sir, to lay the cases before you. About four years ago, I inoculated a young woman for the small-pox; on the third day the orifice seemed a little inflamed; the inflammation, however, went off till about the ninth day, when it began to rise up in the form of a pustule, at which time the girl sickened, and the fever continued four days, attended with the ordinary symptoms. About the evening of the fourth day, some pimples made their appearance here and there in different parts of the body, which remained until the seventh day; some of them filled with variolous matter, and did not disappear till the ninth or tenth day; they left marks behind them which are still visible. From these circumstances I was assured she had the small-pox, and confidently told her so. Since, about the 20th of March, 1798, the small-pox has been epidemical in this part of the country, and in July following she was called to nurse a family who had them of the confluent kind in the natural way. She had scratched a bit of skin off the little finger of her left hand, and being constantly employed in opening the pustules, moving the patients from one part to another, washing dirty clothes, &c. &c. it grew up in the form of a large pustule, and in the course of nine days she was attacked with the eruptive fever, which continued with considerable violence for four days, at which time the small-pox made their appearance, to the amount of five hundred, the most of which filled with good matter, and continued so till the ninth day, when they formed into scabs, and then disappeared.

“ Another girl was attacked with the fever, which continued the usual length of time, attended with the common symptoms, after which, three pimples made their appearance, and then disappeared about the ninth day.

“ Another girl, in the same house, seemed to have been infected by her ; she was seized with a fever, which produced several pustules. The first of these girls being satisfied she had had the small-pox, exposed herself to the contagion, was infected a second time, and attacked with the confluent small-pox, of which she recovered with the greatest difficulty ; upon the back of which, the other girl was attacked with the same disorder, which carried her off about the fourteenth day. A gentleman in this neighbourhood employed me to inoculate his children, seven in number ; previous to which, he had got a servant girl from Baltimore, who had been inoculated before she came to the country. The mark of the orifice in her arm was perfectly visible, and she affirmed she had gone through all the different stages of the disorder ; however, about the time the children were in a blackening state, she took the small-pox, but got over pretty easily.

“ Such cases are certainly distressing both to families and practitioners : from these cases, however, which I know to be incontestible facts, I am really inclined to think, that a person is liable to be attacked with the small-pox more than once in his life.”

On the Decomposition of Super-oxalate of Potash by Sub-nitrate of Mercury, or Red Precipitate of the Shops, and the Formation of Oxalated or Fulminating Mercury. By JAMES CUTBUSH.

MESSRS. AIKINS, in their “ Chemical and Mineralogical Dictionary,” having announced that Howard’s fulminating mercury was an oxalate of that metal ; and considering that the process of Mr. Howard, in the use of alcohol with a

solution of mercury, is not only extremely delicate, and affected by a variety of circumstances, so that the process would not uniformly succeed, but very expensive, I began accordingly a number of experiments, which were finally realized, and am able to give a more economical mode of preparation, having the same constituent parts as that prepared by Howard's process, which are oxygen, hydrogen, carbon, and mercury. All Messrs. Aikins say respecting it (in treating of the decomposition of alcohol) is the following: "Howard's fulminating mercury shows, in a striking manner, the generation of oxalic acid from alcohol, by the nitric acid, this singular compound being an oxalate of mercury, prepared by digesting alcohol with the nitrate of that metal." Therefore, learning from very respectable authorities that fulminating mercury is an oxalate, and considering the manner by which that combination takes place, which will appear hereafter, I began these experiments, modified in different ways, till success attended my endeavours. The present process may therefore be considered an original, cheap, and easy mode of preparation. Indeed, I had mentioned the circumstance to two scientific gentlemen, that, considering the composition of this singular substance, I thought the same preparation might be formed more economically. The recent information concerning the real composition of fulminating mercury, I presumed, was not *generally* known, and, accordingly, on the data above given, extracted from Aikin, I wrote an essay, and published it in Mr. Binns's paper, which is hereunto subjoined. The improvement in the present instance consists so far that *no alcohol is employed*, neither does occasion require, for the particular purpose, the dissolving of mercury in nitric acid, as both the articles, namely, salt of sorrel and red precipitate of the shops, may be procured of the druggists.

I took, in the experiment which succeeded, two parts of super-oxalate of potash (salt of sorrel), and one part of sub-nitrate of mercury (red precipitate), and mixed them intimately in a glass mortar. I then added sixteen parts of distilled water, and rubbed them intimately together ; after which they were poured into a vial. On letting it stand for the space of ten minutes, I observed an apparent change, from a red to an ash colour ; but this effect ensued more immediately on the surface ; on shaking it, the decomposition became more general. At this time I collected a small portion of that which appeared to be the lightest, or rather of a more impalpable fineness, on a filtre, and washed it, which operation was continued till the fluid came off tasteless. I then dried it in the sun, and during this exposure it became of a dark brown, owing, I presume, to deoxidizement to a certain degree. Under the surface, however, of this crust it was of a lighter cast, and, on mixing it with a spatula, it became of a uniform ash colour. On trying a part of this powder on an anvil with a hammer, it exploded very violently, the comparison of which to that prepared by Howard's process was nearly equal. The remaining part of the vial was then introduced into a Florence flask, previously cleansed, and gradually heated over Argand's lamp ; after which it was removed, and, when sufficiently cold, filtered: the powder thus obtained, being repeatedly washed and dried, amounted to one part, as nearly as I could conjecture. A part of the sub-nitrate, however, which did not appear to be decomposed, and which occupied the lowest place in the vessel, I considered would only injure the other, and was accordingly separated. When the precipitate thus obtained was taken off, and put on a tile and exposed to the sun's rays, it appeared of a darker colour than the other. A small quantity of this, treated in the same manner, gave a loud detonation.

We shall now consider the theory of this combination, and the principles of the decomposition of the sub-nitrate and super-oxalate, and conclude our essay with an extract from Howard's paper, and the observations of Bergmann on the decomposition of alcohol by nitric acid, and the formation of oxalic acid, with sundry remarks.

On mixing the sub-nitrate of mercury and super-oxalate of potash in a sufficient quantity of water, the latter is held in solution; but the first effect which ensues is the disengagement of the small proportion of nitric acid in the sub-nitrate, which, having a superior affinity for potash, quits its original combination, and combines with it, forming nitrate of potash or nitre, and, consequently, owing to its small proportion, separates a part of this alkali from its former combination with oxalic acid. The oxalic acid then disengaged, as well as that existing in superabundance constituting the super-oxalate, in the next place unites with the oxyd of mercury, and forms the oxalate of this metal in the form of a powder. The compound, thus formed, collected on a filtre, and thoroughly washed to free it of nitrate of potash, and any portion of undecomposed oxalate of potash, when dried, formed the fulminating mercury in question. The small quantity of undecomposed red precipitate, I attribute to the proportion of super-oxalate not being sufficient for that purpose; but, the proportion being small, I considered it unnecessary to repeat the experiment. In producing the detonation, I remarked that the second, third, and fourth strokes on different portions of powder succeeded much better than the first, and also by heating the hammer. This circumstance would, therefore, seem to be owing to the incitement of temperature in producing the decomposition with more facility. This powder is said to take fire at 368° Fahrenheit: hence, from

the above circumstance, it is not an uncommon thing with our blacksmiths, on some occasions, to light the coal of their forges by this means.

I have no doubt that nitrate of mercury, decomposed by super-oxalate of potash, or the neutral oxalate, would give a precipitate, which, on the same principle, when *well* washed and dried, would fulminate*. This mode, indeed, would be less economical than the one described. I performed a number of experiments, some time since, to produce different fulminating powders with the oxyds of metals and hyper-oxy muriate of potash, &c. which I shall publish at some future period.

In one of the late European Magazines, I find a specification of a patent for forming a lack, to be used expressly for the purpose of detonating fulminating mercury. If this should ever be adopted, the introduction of the present process, whereby the fulminating mercury may be made far cheaper, cannot fail being of importance. By obtaining oxalic from sugar, &c. with nitric acid, in consequence of repeated distillation, causing the acidification; this, combined with the oxyde of mercury, would also afford the oxalate of this metal.

* I have tried this mode, but my experiment did not succeed, owing entirely, I presume, to the precipitate not being sufficiently washed. It is evident, that when oxalate of potash, and nitrate of mercury, when in solution, are mixed together, a double decomposition will take place; the nitric acid passes to the potash, forming nitrate of potash, whilst the oxalic acid unites with the oxyde of mercury; thus precipitated, forming an oxalate of this metal. *Query*: Would not the arsenious acid, digested with a solution of super-oxalate of potash, afford a fulminating arsenic similar to that of Praust's? and would not the *purple powder of cassius* (a preparation of gold), treated in the same manner, give fulminating gold, &c.? It is my intention to make some experiments on these subjects at a future period.

To prepare Mr. Howard's fulminating mercury, 100 grains (or a greater proportional quantity, not exceeding 500) of mercury are to be dissolved with heat, in a measured ounce and a half of nitric acid. The solution being poured cold upon two measured ounces of alcohol, previously introduced into any convenient glass vessel, a moderate heat is to be applied till effervescence is excited. A white fume then begins to undulate on the surface of the liquor, and the powder will be gradually precipitated on the cessation of action and re-action. The precipitate is to be immediately collected on a filtre, well washed with distilled water, and cautiously dried in a heat not exceeding that of a water bath. The *immediate* washing of the powder is material, because it is liable to the re-action of the nitric acid: it is very subject to the action of light. One hundred grains of mercury will give about 120 or 130 of the powder. See Philosophical Transactions, 1800, p. 214.

Mr. Accum, in Nicholson's Journal, vol. 1, p. 299, notices a singular circumstance respecting this preparation: that, on exposing four ounces of it, still wet, on a chalk stone, for three months, he found it converted into a brilliant black powder, and, on introducing it into a vial, the mercury became metalized, with an emission of heat.

Respecting the decomposition of alcohol, and the production of oxalic acid, in consequence of the action of nitric acid on this substance, we have some experiments of professor Bergmann, and others; and accordingly the same principles may be applied to explain the production of fulminating mercury by Howard's formulæ, which compound is proved from this and other sources to be an oxalate of this metal.

Scheele remarked, that, in the action of sulphuric acid on alcohol, acetous acid was produced, the radical being the same as the oxalic; but, when alcohol is treated with nitric acid, as it acts with more energy in the decomposition of alcohol, oxalic acid is formed. Bergmann, in consequence, mentions that the residue left after distilling twenty-four parts of nitrous acid, and eight of alcohol, if re-dissolved and chrystalized, gives three parts of chrystals of oxalic acid. Messrs. Aikins, in their "*CHEMICAL AND MINERALOGICAL DICTIONARY*," a very valuable work, say that the decomposition of alcohol, in the production of oxalic acid, may be shown by a simple experiment, as the following:

On one pound of strong alcohol, put into a long-necked retort, and connected with the pneumatic apparatus, add four ounces of strong nitrous acid, with great caution, at repeated times, and apply a very gentle heat; nitrous æther, nitric oxyde gas (nitrous gas), and carbonic acid are first given out, which last may be absorbed by lime-water, and rendered sensible. When no more gas is given out, add three ounces more of the nitrous acid to the residue, which, again distilled, give the same products as at first. Then, by slow evaporation of the liquor left in the retort, crystals of oxalic acid will be obtained. On the other hand, by too great an addition of nitrous acid, or the boiling of the materials brisk, much acetous acid (the same as distilled vinegar) is also obtained. This circumstance is sufficient to prove, as the same phenomena are apparent in preparing fulminating mercury by Howard's process, that oxalic acid is generated during the action of nitric acid, and this takes place in consequence of the acid undergoing a decomposition, whereby the oxygen acidifies the alcohol (carbon and hydrogen) to a certain degree, and produces the oxalic acid with proper proportions, while other combinations, as nitric oxyde,

nitrous æther, &c. are generated. It appears, also, in preparing Howard's fulminating mercury, that as soon as oxalic acid is formed, the alcohol decomposes the nitrate of mercury, and unites with the metal, which is oxydized, in a precipitate; but this precipitate is liable to be acted upon, and consequently decomposed, by the nitric acid; it would therefore seem that nitrate of mercury was again formed, and the oxalic acid disengaged; by immediate washing, however, this effect does not ensue. Those vegetable substances, containing the radical or base of oxalic acid, as starch, sugar, &c. when treated with nitric acid become acidified, and afford, of course, oxalic acid, and this acidification originates by the decomposition of nitric acid, nitric oxyde gas being evolved, whilst the quantity of oxygen, not combined with azate in the nitric oxyde gas, goes to the oxygenizement of the oxalic bases. It is therefore obvious, that, if oxalic acid, formed by any of these methods, is combined with oxyde of mercury, the oxalate will be obtained. There is one circumstance to be observed, that if sub-nitrate of mercury is digested in a solution of super-oxalate of potash, the indication of the formation of fulminating mercury will *uniformly* be, when the *red* colour is destroyed and the *grey* appears; and this may be a criterion from whence we may judge of our success.

The annexed note on Howard's fulminating mercury, above alluded to, which appeared the 17th of August, explains sufficiently the principles of the formation of this substance by Howard's process, and the detonation occasioned by concussion and other means*.

* HOWARD'S FULMINATING MERCURY.

Since Mr. Howard made known to the scientific world the discovery of fulminating mercury, various theories have been advanced respecting the nature

Observations on Cynanche Trachealis; with a new Theory of that Complaint, &c. By JOHN STEARNS, M. D. of Waterford, Saratoga County (N. Y.)

Waterford, Saratoga County (N. Y.), July 30th, 1808.

DEAR SIR,

I HAVE observed several communications in the Medical Museum, on the subject of *cynanche trachealis*. None of the methods of cure therein detailed perfectly correspond with the one I have adopted, and which, in the course of several years' practice, I have found to be uniformly successful. The

and composition of this singular substance. Some have supposed that it is hydro-guretted oxyde of mercury; others, a combination of nitric æther and oxyde; but the explanation of the process, the *rationale* of the combination, and the detonation, have been satisfactorily explained, in consequence of experiment, upon a principle we cannot doubt.

It is proved to be a compound of oxyde of mercury and oxalic acid, forming oxalate of mercury. From the subsequent mode of preparation, the theory of this combination will appear obvious. On making a solution of mercury in nitric acid in proper proportion, and adding a sufficient quantity of alcohol, a decomposition, and of course a reciprocal change of some of the elements ensue. The hydrogen and carbon, the constituent parts of alcohol, a part of which is necessary for the generation of fulminating mercury, combine with a given quantity of oxygen, and consequently generates the oxalic acid, the proportions being adequate to this combination, and the mercury separated at this instant unites with a portion of oxygen from the same acid into an oxyde, which, combining with the oxalic acid thus formed in a precipitate, produces the oxalate of mercury.

Another combination at the same time, as the operator will readily perceive, takes place, which is the formation of æther in a disengaged state, and ensues, as it is said, by an oxygenizement, in a given degree of the remaining alcohol.

following remarks and treatment of this disorder, I therefore submit to your disposal.

The croup has a frequent occurrence in this vicinity. I have fifty cases on record during the three years immediately preceding. Two of these cases proved fatal, one of which was unable to retain the medicine, but by a constant vomiting ejected every thing from its stomach; the other had a pulmonary affection from its birth, and expired a few hours after I first saw it. I can, therefore, safely assert, that this mode of treatment has infallibly succeeded in every case of *simple cynanche trachealis*, in which the medicines have been long enough retained to produce their customary effects. This disorder has, therefore, become completely divested of its terrors, and yields to medicine with as much facility as the most simple ailment of the human frame.

It therefore appears that one part of the alcohol (which unquestionably is the precipitant) is converted into æther, while another portion, containing, of course, the radical of oxalic acid (hydrogen and carbon), unites with a given proportion of oxygen, and that combination again with the oxyde of mercury produced at the same time. The nitric acid, therefore, is decomposed, and in the above manner; it remains then to show the *rationale* of that detonation. From the principles of the combination, and the consideration of the laws of affinity, it appears as follows: the temperature being raised to a sufficient degree, disposes the elements to arrange themselves in a new order; this temperature is excited by the blow of a hammer or other causes. The hydrogen unites with the oxygen of the oxyde, and forms water; the carbon then, combining with another portion of oxygen belonging to the oxalic acid, forms the carbonic acid; *at this instant the mercury is volatilized*, being reduced, and this change ensues momentarily, in consequence of which the detonation is produced.

According to a former theory, it was merely supposed that water was alone formed, in consequence of admitting that this fulminating substance was only a hydro-guretted oxyde of mercury.

G.

Contrary to the opinion of most medical theorists, I am induced to believe that this disorder is not primarily an inflammatory affection of the trachea. I am warranted in this opinion not only by the prominent symptoms, but by the appearances on dissection. That inflammation does sometimes take place, I readily concede ; but this is not necessarily connected with the disorder, and, when it does succeed, is always the effect of secondary causes. Cold, applied to the surface of the body generally, or to the trachea in particular, is, perhaps, the invariable cause of this complaint. Its operation is to induce a torpor of the absorbents of the trachea, either immediately by a direct application to their mouths, or by sympathy when applied to remote parts of the body. Thus paralyzed, they cease to absorb the mucus exuded by the exhalants. This mucus, consequently, accumulates, till, indurated by evaporation, it is converted into a tough membrane that completely obstructs respiration. Does this torpid state of the absorbents necessarily induce local inflammation? I think not; for although the action of the exhalants of the trachea may be partially increased from the irritation of the indurated mucus, yet there are no indications of that degree of inflammation that requires depletion, and it appears to me that every remedy that has no other operation but to induce direct debility, must increase the torpidity of the absorbents, and consequently expedite the fatal termination of the disease. Hence bleeding is, in my opinion, a very hazardous remedy, and ought never to be prescribed in simple cases of croup.

The indications of cure are simply to restore the healthy action of the absorbents of the trachea. Whenever this object is accomplished, the morbid symptoms vanish ; the membrane is partially absorbed, while its detached parts are expectorated,

and the patient becomes convalescent. Violent emetics have sometimes been prescribed with success, and, whenever they do succeed, it is unquestionably owing to the action of the absorbents being excited by the convulsive efforts which they induce. But, when they fail of exciting the absorbents of the trachea, the debility which they induce is accompanied by an exacerbation of all the symptoms; I have, therefore, long since, laid aside bleeding and violent emetics in the cure of this disorder, and place my whole dependence on calomel, cerated glass of antimony, and seneka. The two first medicines I always give combined in very large doses, and repeat them every six or eight hours, till they complete the cure. They have always succeeded with me when used without the seneka, but, since this medicine has been so highly extolled by Dr. Archer, I have generally accelerated the cure by administering it in the intervals, agreeably to his directions.

Twenty grains of calomel, combined with eight grains of cerated glass of antimony, is the dose that I generally prescribe to an infant of a year old, when the disease has assumed its most alarming symptoms. This dose will operate two or three times as an emetic, and as often by stool, and will always alleviate the complaint, and sometimes effect a cure. If the disorder continues after the operation of this dose, I give the decoction of seneka, and, at the expiration of every eight hours, repeat the dose till the cure is complete. In common cases one dose is sufficient, and I have never found it necessary to give more than four.

I am aware of the censure I may incur from the empiric boldness of this prescription. My only answer is, that the unparalleled success of this mode of treatment, for ten years of

extensive practice, amply justifies its continuance, and, I have no doubt, will remove every objection in the minds of its opponents, if they will give it a fair experiment.

JOHN STEARNS.

Dr. J. R. Cox.

An Account of the Efficacy of Mercury in Pulmonary Consumption, and of a new Mode of conveying that Medicine to the Lungs. In a letter from Dr. P. W. LITTLE to Dr. RUSH.

Mercersburg (V.), February 18th, 1808.

DEAR SIR,

IN your lectures you very justly observe, "diseases are incurable only from their being considered so." I feel happy I have it in my power to add several proofs to those already recorded in favour of your maxim, and in contradiction to the prevailing prejudice, having within the last year cured four cases of confirmed consumption. My principal medicine in counteracting the morbid action in this volcanic disease, after the inflammatory diathesis is sufficiently subdued by venesection, cathartics, blisters, and the antimonial powders, are mercury exhibited in the *form of gas*, and *inhaled* into the lungs, digitalis sac. saturni, and the usual tonics. I prefer the above mode of exhibiting mercury for the following reasons :

1st. It has a greater surface to act upon. "Dr. Kiel supposes that the lungs, from the peculiar structure of the branchial vessels and air vesicles, expose a surface to the action of the air, equal to the extent of the whole external and visible surface of the body."

2d. It acts *specifically* upon the part diseased, thereby promoting absorption and discussion of the tubercles. It has been observed by some one, but by whom I do not now recollect, that “we know of no medicine that can exert its specific effects upon the lungs, by dispersing tuberculous concretions; nor is it probable, from what we know of the animal economy, that such will ever be discovered.” From our knowledge of the effects of mercury upon the system, and in discussing venereal buboes, chancres, &c. I flatter myself that, by the above mode of exhibiting it, we are in possession of that medicine which was supposed never would be “discovered;” and, should it be deemed necessary, the mercury may be conveyed into the lungs in the following manner: a hollow bougie, of the elastic gum, with a bent probe like a catheter, may be introduced by the nostril, and passed into the larynx, which may be known by the flame of a candle being agitated when presented to the orifice. The probe may then be withdrawn with one hand, whilst the bougie is supported and fixed by the other. Being thus introduced, it may then be fixed to a vial containing the mercurial gas, or to Mudge’s inhaler.

3d. It produces a ptyalism much more certainly and speedily, without that tendency which mercury usually has to run off by the bowels, which unhappy tendency appears to be the greatest barrier to the cure of phthisis pulmonalis; for, in almost every instance in which a ptyalism has been excited, a cure has been performed.

Miss P. M^cC—— (a phthisical patient) was salivated in twenty-four hours, by inhaling the mercurial gas frequently in that time; Mr. S—— was also salivated by the mercurial gas in twenty hours; Miss J. M^cC——, was salivated in forty-eight hours; and Miss B. M^cK——, in thirty, by the same medi-

cine. Miss I. M'C—— had a violent diarrhœa, and was evidently in the last stage of phthisis. Miss R. S——, with "galloping consumption," began to complain, in twelve hours, of her mouth being sore, after she began with the mercurial gas; Miss S—— supposed the discharge to be at least a pint of matter in twenty-four hours. She was reduced to the lowest extremity; had a diarrhœa and swelled legs, but happily recovered.

You have observed in your Inquiries, when speaking of the "second, or hectic state of consumption," that the removal of the fever was the greatest desideratum in the cure of consumption. In the above cases, I derived the most happy effects from the use of digitalis and sac. saturn. with opium at night. In some instances, it has acted like a charm in alleviating all the hectic symptoms. I have found no medicine equal to the mercurial water in alleviating the cough, when inhaled. As experience, reason, and free inquiry are the only effectual agents against error, your opinion upon the above method of treating, or rather of exhibiting mercury in phthisis pulmonalis will be anxiously and cheerfully received. May the benedictions of Heaven attend you, and may God long preserve your useful life*!

P. W. LITTLE.

Dr. Benjamin Rush.

Experiments to Ascertain the Purity of the Air in different Situations. By ADAM SEYBERT, M. D. &c.

THE results of many experiments, to ascertain the purity of the air, which I made on a passage from Bordeaux to

* Dr. Little has omitted informing us how to prepare the mercurial gas for use. EDITOR.

Philadelphia, in 1796, are published in the fourth volume of the American Philosophical Transactions. These experiments were performed under various circumstances, though always with the same test, viz. nitrous air, obtained by means of brass filings and diluted nitric acid.

From the trials just alluded to, it was inferred that the *oxygenation* of our atmosphere was the *same* in every situation *over land*, whether in large cities or in the country ; at the lowest and at considerable heights ; at the same time I conceived myself warranted in making the following conclusion, “ that the air over a large body of water is always purer, *cæteris paribus*, than that of the adjoining land.”

That the air over the ocean is purer (more highly oxygenated) than that over land, is a very popular opinion, and might be maintained, by reasoning, to an unlimited extent. With some hesitation I doubted its correctness, but could not abandon the idea until the experiments of many European philosophers were published. We now maintain, from a number of concurring experiments which were made in Egypt, and in every part of Europe, by men of the first eminence, that neither climate, nor temperature, nor distance above the surface of the earth, produce the smallest variation in the relative quantities of oxygen and azote, as constituents of our common atmosphere. Humboldt and Gay Lussac have proved that the atmosphere of theatres, which had been breathed for some time by a crowded assembly, differed only one per cent. as to the proportion of oxygen which it contained, from the atmospheric air on the outside of the building ; and Seguin informs us, that he examined the air of hospital wards, after they had been closed for twelve hours, which exhibited “ an insupportably infectious smell,” and found it almost as pure as atmospheric air.

Subsequent experiments have proved, that trials by the nitrous test are very fallacious, and that no certain inferences can be drawn from them. Other, and more certain means, having been proposed and employed by chemical philosophers in Europe, I was desirous to ascertain what the result would be in America, when the same methods were made use of. With this view, the experiments related in the annexed table were made.

The test employed on these occasions was a solution of sulphuret of potash in water. The liquid was, for some time, exposed in contact with atmospheric air, before it was bottled for use, thereby to prevent any absorption of azote in the experiments.

Cavendish, Marti, Berthollet, Fourcroy, and Davy, from numerous trials which they made, determine the proportion of oxygen gas in atmospheric air, to be between twenty and twenty-three hundredths. It will be found, that the results which we obtained, cannot be said, in a general way, to differ from those just mentioned. I never found the proportion of oxygen so great as $\frac{23}{100}$, and commonly between $\frac{20}{100}$ and $\frac{22}{100}$. These trifling differences may be attributed to variations which are sensible to the thermometer, barometer, and to circumstances in the mode of operating. Although the results are stated in round numbers at $\frac{20}{100}$, I do not recollect an instance where the absorption was not a fraction above that number.

I now consider as erroneous, the opinion formerly adopted by me, that the air over large bodies of water is purer than that over the adjoining land. This is very evident from the results of all the trials, but more especially from those had November 23d, 1802.

Date of the experiment.	Temperature.	State of the atmosphere.	The air which was tested.	Quantity absorbed by the liquid sulphuret of potash.	Effects of lime water.
1802. August 14th*.	77°	Wind S. W. partially cloudy.	In the yard back of No. 114, Market-street, where it was healthy	20.0	No experiment.
—	—	—	In the middle of Market-street, opposite to Mr. Dunlap's. This might be looked upon as a country situation	20.0	do.
—	—	—	Directly opposite to Mr Innes's brewery, Water near Vine-street. Several persons died in Mr. Innes's house of the prevailing fever	21.0	do.
—	—	—	In Front near Vine-street, where the fever was prevalent	21.0	do.
20th.	76	Wind S W. cloudy.	The experiments related the 14th inst. were repeated this day	in every case 20.0	Did not render lime wat. turbid.
November 4th.	not ascertained	Wind S. W.	From the neighbourhood where the yellow fever had prevailed	20.0	do.
—	do.	—	From the Neck, a low situation; many marshes in the neighbourhood	20.0	do.†
—	do.	—	Opposite Mr. Dunlap's	20.0	do.
—	do.	—	Air of a room in which a person continued ill of the late prevailing fever. A wood fire was kept in the apartment	20.0	Rendered lime water turbid‡.

* Yellow fever prevailing in and about North Water and Front, near Vine-street.

† Air collected at different times, during the summer of 1798, in various situations in the Neck, when agitated with lime water, caused a white precipitate, more or less copious. The lime water, in the experiment above stated, remained unaltered. I attribute this circumstance, in a great degree, to the frost having prevented the formation of carbonic acid gas.

‡ The occurrence of carbonic acid gas in this case may be attributed to the wood fire in the apartment.

Date of the experiment.	Temperature.	State of the atmosphere.	The air which was tested.	Quantity absorbed by the liquid sulphuret of potash.	Effects of lime water.
1802. November 23d.	not ascertained	Wind S. W. sky clear.	Half way between the shore and the sand bar opposite to Philadelphia	22.0	No experiment.
—	do.	—	Half way between the sand bar and the Jersey shore	22.0	do.
—	do.	—	Quarter of a mile from the shore of the Delaware river, on the Jersey side, near a flourishing wood	22.0	do.
—	do.	—	In the yard back of No. 114, Market-street	22.0	do.
1808. July 22d, $\frac{1}{2}$ past 2 o'clock, P. M.	82°	Wind S. W. partially cloudy.	Opposite Catherine-street, on board a packet-boat	20.0	Rendered lime water turbid*
$\frac{1}{4}$ past 6 o'clock, P. M.	76	do.	Opposite town of Chester	20.0	No experiment.
23d, $\frac{1}{2}$ past 6, A. M.	74	Wind S. S. W. cloudy	Opposite Reedy Island	20.0	Lime wat. unaltr.
$\frac{1}{4}$ past 6, P. M.	78	Wind S. E. partially cloudy.	Opposite Bombay Hook. Shore distant 3 miles	20.0	do.
24th, 6 o'clock, A. M.	79	Wind S. cloudy.	Cape May distant 8 miles	20.0	do.
10 o'clock, A. M.	80	Wind S. E. sky clear.	On the beach of Cape May, western shore	20.0	do.
25th, 10 o'clock, A. M.	82	Wind S. E. sky clear.	On the beach of Cape Island, eastern shore of Cape May	20.0	do.
August 1st.	78	Wind W. N. W. sky clear	Delaware Bay, Cape Henlopen light-house bearing S. W. distant 22 miles	20.0	do.

* There were many persons on board the boat, and a fire was kept for the purpose of cooking. The passengers were anxious to witness the experiment, and crowded about me. Could the presence of carbonic acid gas in this trial be owing to the respiration of the people?

Account of the Discovery of the Vaccine Disease among the Cows, in Lancaster County, Pennsylvania. In two letters from Mr. JOHN EBERLE, student of medicine, to Dr. KLAPP.

Southwark, July, 1808.

SIR,

IF it should meet your approbation, the following correspondence may occupy a place in one of the future numbers of the Medical Museum.

The intelligence of a recent discovery of the vaccine disease among the cows, in Lancaster county, Pennsylvania, cannot be uninteresting to your readers.

I am, sir, yours respectfully,

JOSEPH KLAPP.

Dr. J. R. Cox.

Extract of a Letter, dated Lancaster, July 4th, 1808, from Mr. JOHN EBERLE, student of medicine, to JOSEPH KLAPP, M. D.

DEAR SIR,

I HAVE met with a circumstance which will perhaps be interesting to you. It is this: about a month ago, I was asked by a country woman why the vaccine disease was called cow-pox? I told her it originally came from the cows, and gave her some description of it. She then informed me that one of her cows had the disease, such as I described, and that they could not milk her. I went and examined her, took a little of the virus on the point of a lancet, with which I vaccinated a young man, who never had either the small-pox or cow-pox.

On the third day, the place of puncture was a little inflamed and elevated, exactly like the common cow-pock at that period. The local affection afterwards went on with the most coincident regularity of the genuine disease. The areola was beautiful, the pock of the usual form and appearance, and the sympathetic fever considerable. In short, I am convinced that it was the genuine cow-pox. I have enclosed the scab for you*.

A Reply to Mr. John Eberle.

Southwark, July 10th, 1808.

DEAR SIR,

I received your letter, per the mail, this morning, and as I feel much interested about the discovery which you suppose you have made of the vaccine disease among the cows of Lancaster county, I have immediately written a few lines in reply, to solicit further information.

Hitherto I believe this curious disease has not been noticed among the cows of this country, except in one or two instances. Perhaps, to ascertain that it prevails almost as common with our American cows, as it does with those of the Shire counties of England, it is only necessary to make a general and strict inquiry. Herewith I send some active variolous matter, with which I wish you to test the liability of the young man whom you vaccinated with the fresh matter from the cow, to the morbid influence of the small-pox. When the experiment has been made, please to acquaint with its result

Your humble servant,

JOSEPH KLAPP.

* This scab was given to the editor by Dr. K. It was most unquestionably the scab of the genuine vaccine. It was tried in one case ineffectually.

To this letter Mr. Eberle wrote the following very satisfactory answer.

DEAR SIR,

Lancaster, July 18th, 1808.

I received yours of the 12th inst. and at your desire immediately inoculated the man who had been previously vaccinated with the matter from the cow, with the variolous matter you sent me. The infection did not take; the place of puncture was slightly raised on the third day, but has since totally disappeared. This is, surely, an incontrovertible evidence of the genuineness of the vaccine matter with which he had been vaccinated. Perhaps, indeed, as you suppose, the disease is much more common among the cows of this country than is generally imagined. I have since heard many say, that they often saw pustules on the udders of cows, which it is very presumable were of the cow-pox kind. There is an experiment I should like to make (perhaps it has been made), which, if rightly conducted, would probably throw some light on the nature of the vaccine disease: to inoculate a cow with variolous matter, then a human subject with the newly formed matter in the pustules of the cow. The disease might be much milder, and, perhaps, by successive repetitions of inoculation with the same matter on cows, the mild form of the small-pox, or the cow-pox, might be generated from the most virulent variolous infection. I really believe your theory* of the cow-pox is correct, and I am determined to put it to the test of experiment.

I am yours, &c.

JOHN EBERLE.

Dr. Klapp.

* The theory alluded to, is a supposition that the vaccine disease and small-pox are modifications of one and the same disease. It was advanced about two years since, on the evidence of ancient history, and reasoning on the apparent identity of the diseases.

MEDICAL MUSEUM.

VOL. V.....NO. IV.

*Facts to prove that Blende, or the Sulphuret of Zinc, may be worked with advantage in the United States. By ADAM SEYBERT, M. D. &c. in answer to the question, "Can this Ore be worked to advantage in the United States?"**

THAT *sulphuret of zinc* was found near the Perkiomen creek, Montgomery county, Pennsylvania, was announced by me in October, 1806. The fact was communicated to Dr. James Mease, of Philadelphia; and, early in 1807, he related it in his *Geology of the United States*. We need not particularize facts to prove the utility of zinc, and its various preparations in medicine and the arts; its being *essentially* necessary in the formation of brass, is alone sufficient to stamp its value.

It has been asked, "Can this ore be worked to advantage in the United States?"

We are then informed by the author of this question, that "no information on this subject can be obtained from *any book* with which I am acquainted. Dr. Meade, a gentleman

* See Medical Museum, vol. v, p. 133.

possessed of extensive knowledge on mineralogy, informed me, that it is *never worked in England*. Dr. Bruce, professor of this science in the College of Physicians, New York, told me it is reduced in Wales; and Mr. Godon, of Boston, who is extremely well acquainted with subjects relative to this business, has declared, that the zinc cannot be obtained from this kind of ore, in the large way, but with the utmost difficulty.'

From the observations which immediately follow the question proposed, it is evident, that peculiar difficulties are not supposed to attend the working of this ore in the United States, but the principle that *blende is not and cannot be worked any where* to advantage is assumed and acted upon. We will consider the question in this light.

The *blende* of *Perkiomen* is asserted to contain 72 per cent. of metal. This product is far greater than that furnished to any chemist, in the analysis of the *blendes* from different parts of Europe; according to Bergmann, Kirwan, Haüy, Delametherie, Lampadius, Thompson, Hecht, and Schmeisser, none of the *blendes* which they examined yielded more than 64 per cent. of zinc. They state the proportions of zinc to vary from 44 to 64 per cent.

From the results just mentioned, it is evident, admitting the analysis to be accurate, that the *blende* found in Pennsylvania is much richer than that found in Europe; it will then follow, that, as it is advantageous to work the *blendes* of Europe, it will be much more so as regards the *Perkiomen blende*.

I do maintain that this ore can be worked in America with advantage. We will state facts to prove that *blendes* are

worked in different parts of Europe on a large scale ; and *numerous books*, by authors whose authority is second to none, will be pointed out in support of my assertions.

It is not intended to conceal that some authors say, they “do not know any country where *blende* is wrought to obtain the zinc.” Chaptal, vol. 2, p. 46. This acknowledgment only proves that those authors do not know all that is done in this way. They are few in number, and, we presume, the one has copied from the other. This statement of Chaptal will appear the more surprizing, after we read of his having obtained “much zinc from the *blende* of *St. Sauveur*.”

Independent of books, it appears surprizing to me that a *chemist* should doubt the utility of an ore which himself informs us will yield 72 per cent. of metal. From theory alone we would infer that *these sulphurets of zinc*, if found in large quantities, could be worked with advantage to the arts, in situations which by no means offer the advantages of the locality at the Perkiomen. If the common principles of assaying and working of ores are applied to this case, the promised result must appear highly favourable. We must vary our methods according to the constituents of the ores we are about to work.

Brandt, in 1735, proved that *blende* contained *zinc* ; and a manufactory to work these ores was established at Bristol, Great Britain, as early as 1743.

Bishop Watson (Chemical Essays, vol. 4, p. 20) says, that *blende* or *black jack* must be deprived of its sulphur before it can be employed in making of brass: and (*ibid.*) after informing us of the localities of this mineral in England, he observes, “it has for *many years* been used, as well as calamine, for the

making of brass, at Bristol." This essay was published at Cambridge, 1786.

The enlightened author just quoted tells us, that some operators have *rejected* blende in the formation of brass, whilst others *prefer* it to calamine. I believe the two ores are equally proper to be used, after they have been so managed as to expel their sulphur, and free them from other foreign mixtures : this is the case with the ores of other metals, many of which cannot be smelted with advantage until they have undergone previous and tedious preparatory processes, so as to make them more or less pure. The fact, that some prefer calamine, and others blende, proves the two substances to be equally serviceable ; it often happens, that workmen who are accustomed to work one peculiar species of ore, do not acquaint themselves with the methods of managing other kinds of ores of the same metal. Here science triumphs over empiricism ; it furnishes principles to govern the well-informed workman in all cases.

In the Berlin Memoirs, as early as 1746, we are informed by the celebrated Margraaf how to obtain *metallic zinc* from *roasted blende*.

Aikin's Dictionary of Chemistry and Mineralogy, vol. 2, p. 501, details the process, at full length, for obtaining metallic zinc on a *large scale*, from *blende*, after *roasting*.

Although we know that Gellert formed a bad-coloured and a brittle brass with *these ores* of zinc, we well know to what cause to attribute his want of *perfect* success. This gentleman neglected to *roast* the ore sufficiently before he proceeded to combine it with copper.

In the *Voyages Metallurgiques*, we are informed that Duhamel and Jars succeeded in forming *brass* of the *first quality*, by employing the *sulphuret* of zinc, which had been previously *well roasted*.

In Chaptal's *Elements of Chemistry*, vol. 2, p. 47, 4th American edition, we are told that the author "strongly calcined the *blende* of St. Sauveur, and mixed the powder with charcoal." He states that he obtained "*much zinc*" from it, by following the usual process.

Black's *Chemistry*, vol. 3, p. 289 (American edition), after describing *blende*, observes, "these several varieties of it have been *long employed* for making of brass. The process consists first of *roasting*, then cementation with charcoal and copper."

At Rammelsberg, near Goslar, there is a considerable manufactory of brass: I visited it in 1794. Here they form this important alloy with (*cadmia*) a sublimed oxyd of zinc, which is obtained by proper management during the *roasting* of their lead ores and *blendes* in a reverberatory furnace.

The ore of Rammelsberg is much more *compounded*, and affords *considerably* less of zinc, than *that* from *Perkiomen*. At Rammelsberg, this metal is in combination with some gold, silver, lead, copper, iron, and sulphur. We should certainly presume that our *rich* ore could be worked with more ease and profit than that near Goslar. It is well known that this last establishment yields a considerable gain to the proprietors, from the application of the zinc (obtained in their smelting of the ore) in their manufactory of brass. The working of ores requires a proper locality, a well regulated economy, and a well directed system of operation, in conducting the various

processes of roasting, smelting, separating, &c. Poor mines furnish more benefit to the undertakers, when properly managed, than rich ones do when there is not a proper attention paid to the subject. These assertions are completely confirmed by the statement of Jars (*Voyages Metallurgiques*), as applied to the working of the poor copper ore of St. Bell, near Lyons. Economy, in these things, forms a chain composed of innumerable minute links, none of which can be injured, removed, or broken, without risk to the whole system. Neglect will cause final ruin, though its progress should be very gradual, and at first imperceptible.

Cronstedt, vol. 2, p. 782, informs us that *zinc* is *obtained* from *blende*; and, page 787, he remarks, "but, in general, *blende* is better known among our English miners by the nick-name of *black jack*; by whom it is *disposed of* to the makers of brass."

Kirwan, vol. 2, p. 429, when speaking of the mode of making brass, says that "1.5 of calamine or *roasted blende*" should be employed. He recommends them indiscriminately.

Rees's Cyclopædia, article brass. "Brass is made in many countries, but no where more extensively or better than in England, in which both the materials are in great abundance. The ores of zinc are several species of *calamine* and of *blende*, termed, by the miners, *black jack*, which are found abundantly in Devonshire, Derbyshire, and North Wales, accompanying the lead ores, and in other places. These are chiefly oxyds, or carbonated oxyds of zinc, and require a *previous calcination* before they are fit for *brass making*."

Hopson's Wiegleb, p. 438 : *roasted blende* is employed with copper, *instead of roasted calamine, to make brass in the large way.*

Sage, *Analyse Chémique*, tome 2, p. 468, informs that zinc is *obtained* by distilling *roasted blende* in iron retorts ; and 3, p. 149, he says, "*Toutes les chaux de zinc sont propres à la préparation du laiton, la cadmie, tutie, et la blende calcinée peuvent être employées.*"

In answer to those authors who say they do not know of any places where *blendes* are worked to obtain zinc, I will refer to Watson's *Essays*, and beg leave to state as follows : " At present there are three works in this country in which zinc is extracted from its ores : two in the neighbourhood of Bristol, and one at Swansey. The ore (*sulphuret of zinc*) is roasted, and exposed to a strong heat in large closed clay pots." Thompson's *Chemistry*, vol. 1, article zinc, 3d edition.

I could multiply my authorities : this is unnecessary. To be confirmed in the opinion now advanced, by the information given by my much esteemed friend, professor Bruce, of New York, is highly gratifying to me.

I conceive the above remarks to be of some importance. It was not presumed, when the subject was at first considered, that it would have been carried so far. Its utility urged the mind to give it a proper attention : this was the more necessary under present circumstances. When the political situation of a country is such that its foreign relations are interrupted, and much is expected from an energetic application of its internal resources, it is the duty of every citizen to contribute his mite towards this end. When erroneous opinions are

propagated, and unfounded doubts are excited, it is a two-fold duty to place facts in a true point of view. Such observations will tend much to disappoint the first expectations of individuals, and to paralyse the wise efforts of a judicious public. No one can now hesitate as to the propriety of working abundant and rich *sulphurets* of *zinc*. We have the example before us ; and I look forward to that period as at no great distance, when the articles of *zinc* and *brass* will form interesting items in our catalogue of exports.

Dr. J. R. Coxe.

July 16th, 1808.

Observations on the Errors of Men of Science. By J. C. ROUSSEAU, M. D. Physician to the Philadelphia Dispensary.

Nescire quædam, magna pars est scientiæ.

CICERO.

TO understand and explain the phenomena of nature has at all times been the boast of the learned. An erroneous prejudice, corroborated by false pride, forbade every tutor, even the most unqualified for the task, to leave any thing unexplained ; and, rather than acknowledge the defects of science, innumerable errors have been advanced, propagated, supported, and established so firmly, that he who attempts to investigate the old doctrines of the schools, exposes himself to the strongest opposition, and to all the passions raised by the envy, not of the philosophers, but of those who, too indolent to devote any time to inquiry, humbly prefer to follow the tracks beaten by their predecessors, as if they were ashamed to think we can know more than our ancestors, and, like a clock-

work, are moved, as long as they exist, by the spring of authority.

Oh ! sacred Authority, long enough have you been blindly worshipped ; now suffer a few, if not to desert your banner, to endeavour, at least, without denying you the little share of respect that you deserve, to retrieve themselves from the errors and evils into which you have, not irrevocably, I hope, involved the human race.

Ideal science may wander *in vacuo, a nihilo nihil*. Physical knowledge must rest upon physical facts, and those facts are, at all times liable to be investigated.

Had ideal sciences only been influenced by error, no one would wonder ; but it found access to, and diverted the minds cultivating those sciences, which ought to rest upon no other basis but that of observation.

But although men of genius, in their scientific pursuits, are apt to err as well as men of less abilities, we are, nevertheless, often indebted to their very errors. They have, in many instances, been a barrier to some who would have followed the same paths ; awakened, in others, ideas which opened a new road, and, oftener than we are sensible of, roused a dormant truth nursed in a bosom wanting nothing but a proper stimulus to excite its energy.

To point out such errors is deserving of the gratitude of a true philosopher, and, far from lessening his merit, it seldom fails to give it a new lustre, especially when the venom of envy has no access to the inquiry.

No philosophers, ancients as well as moderns, are free from errors, and their high character is often the only support of their theories, which vanish with their memory.

The *ovarists* were swallowed up by the *animalculists*, for no other reason than that it was more entertaining to fancy (for they were never seen) jumping and skipping *animalculæ*, than to contemplate a torpid *ovum*. The simple and admirable every-where-witnessed operation of nature re-producing the individual from its rudiments contained in the egg, was drowned in ponds of small fishes of thousand forms, all dying as soon as one of them had lodged himself in such a way as to become the elected.

How many believers in such pretty things have, I shall not say seen, but attempted to see them?

Tired of sitting still with our planet, a philosopher got himself in gaol for having told his friends that it was much better to make the earth travel round the sun, than to suffer any longer the sun to run such a long fatiguing journey every day; that he could make the earth perform it slow and easily in the course of one whole year, by only whirling it round once in twenty-four hours. As this did not make any alteration in their former regulations and calculations, they agreed to let him do it.

But now-a-days, the inhabitants of our planet being all in motion, could we not try to let both sun and earth rest? For aught I know, they may be, and we only want a system to make them so.

The Newtonian system of light will unavoidably fall, as well as the faith put in lazarettoes, lightning-rods, horse-shoes, snake-stones, and other *nostrums*, which can live no longer, than the credulity of those who worship them is a safeguard against the test of investigation.

It is somewhat singular that no one ever built a system of sounds, framed upon the system of colours : for the air, the vehicle of sounds, might as well be divided in layers, giving, by their tremulous motions, one the tonic, others the fifth, the third, and all the other intermediate tones, forming the seven notes of the gamut, as the rays of the sun were, by Newton, divided into seven colours. Sounds affect the ear as colours affect the eye : all impressions cannot be alike, and they must be represented by signs or words.

Red, blue, yellow express different perceptions of the eye, from the reflection of light upon different surfaces ; but such a fanciful division is no more existing in the rays of the sun, or in the fluid called light, than the seven notes of the gamut in the air, which, by its modified vibrations, affect the sense of hearing with all possible variety. But few philosophers are musicians.

Light is suffered to pass through a glass prism, and, by its refraction, exhibits several colours upon the colourless surface that receives it. They are divided into seven, by a philosopher commanding credit from his contemporaries ; a few, looking at the experiment, can but see it, and all take it for granted. It is transmitted from age to age as a sacred truth, and so many fanciful theories founded upon it, that it becomes dangerous to attempt to shake such a foundation.

Yet, although we pay the utmost respect to the genius of the immortal Newton, we would venture something to put this to the test of an experiment, that, if twenty sensible men, who never had any knowledge of the theory of colours, were left, one after another, to number the colours refracted through the prism, hardly three of them would agree upon the same, either in number or denomination.

Further, if one of these pretended rays of light is suffered to pass again through a second prism, another decomposition takes place*: as the column of air put in motion in a flute exhibits different sounds, or, more correctly speaking, affects the ear with a variety answering to the different outlets that the removal of the fingers opens to it, light is reflected and refracted in as many different ways as we have a variety of forms, and density of matter.

But men have, and will probably always prefer, the possession of fanciful theories to an acknowledgment of ignorance. The latter is doubtless preferable, but the other answers sometimes (it is a sorrowful truth) better purposes.

Uncertainty and ignorance can only hurt vanity; but to the true philosopher, the destruction of an error is an acquisition that affords him more satisfaction than the propagation of a number of axioms inculcated by education, corroborated by habit, and respected by example; keeping the human mind in darkness, and concealing from it the means of acquiring that happiness which it is made to enjoy.

* *Système de Physique*, by the baron de Marivetz and Goussier.

What a collection of absurdities have been heaped together by a good man*, to serve a purpose which he entirely missed; having taught, I am sure, and as any one will find, instead of eradicating, a vice, which public opinion will always powerfully check. We can only say, with the poet,

Aliquando bonus dormitat Homerus.

However, if some have been busy in contriving scare-crows, we are not without talismans.

The narrow-minded, wanting education and information, nails a horse-shoe over his door, to keep away witches. Witches, to be sure, would never be seen there, nor *any where else*; but its real use is to keep away the dreadful apprehension of evils, which would probably never befall him.

A snake-stone is purchased, and kept with reverence. It certainly will do no good, but it will do no harm, and will answer as good a purpose as the horse-shoe.

A lightning-rod surely does also a great deal of good; for if we calculate the immense mischief that may be produced in the human frame by fear and apprehension, especially when excited by such an awful meteor as lightning and thunder, we cannot but be extremely thankful to Franklin, for having given credit to such a cheap, harmless preventive.

But to extend this benefit to the community at large, I would propose to erect, by subscription, lottery, or otherwise, in some central part, or any part of a city, where timid people might

* Tissot.

seek for safety, a lightning-rod, of such size and magnitude as to command faith from all quarters, to have it kept in order* by the additional rent that the houses in its neighbourhood would certainly command, in proportion to the degree of faith raised by the proximity of such a tutelar angel.

Indeed, if the degree of faith was such, in Virginia, as to induce four counties to join together for the purpose of purchasing the snake-stone of Mr. Micow, we make no doubt that a whole state would join in the expence, to erect such a protector, especially where other horse-shoes are put and kept up at a great deal dearer rate, with little or no benefit resulting to the community.

Faith will admit of no investigation. Opinion precludes it in the mind that entertains it, except in such a way as to corroborate that opinion.

We see, repeatedly, experiments, instituted either to support or to oppose an opinion, give different results, or their results misapplied and mistaken.

Fanning, blowing with the mouth, will warm and cool. Why? Because warming and cooling are words meaning nothing but relatively; but, strictly and correctly speaking, fanning or blowing with the mouth will bring the temperature of

* This is a grand desideratum, for we venture to say, and with propriety, that, in general, two out of three are out of order. It matters but little, it is true; for they answer the same purpose. See the Schuylkill permanent bridge's, and others about the city and its environs.

the substance fanned or blown upon to the standard of the atmosphere fanned over, or the air of the lungs blown upon it*.

If in a temperature of 82° you expose a lump of ice and warm water, fanning will melt the ice and cool the water. Again, if in the same temperature you expose two lumps of ice, fan over one, and let the other alone : in the first case, the ice will melt much sooner than in the latter : then many would receive this conclusion as a correct one, that fanning warms instead of cooling ; but if warm water is fanned over in the same temperature, it will become cool sooner than the same water in a quiet atmosphere of the same degree, the fanning doing nothing but changing the ambient air, that is either warm or cold, according to the temperature of the body surrounded by it.

For the same reason, a current of air at 82° , in a temperature of the same degree, is grateful and invigorating to living bodies ; but the same current of air, in a temperature of 75° , is unpleasant and debilitating.

The result of an experiment should not be taken as an authority, unless the whole process, and all circumstances attend-

* Blowing with the mouth will produce different effects, according to the size of the column of air regulated by the mouth and lips. When, with a large open mouth, we expire the air of the lungs upon a substance held near to the mouth, the air, having little or no time to alter its temperature, is warm ; but if the same is done by closing the lips, the air will have different temperatures, according to the smallness of the aperture of the lips, and the distance from the mouth, of the substance receiving it ; a small column of air being sooner cooled in passing through the ambient air. Thus we might alter the moral of the fable into this : That ignorance has made crimes of the most natural things.

ing it, have been minutely detailed. Error, then, stands a better test, and may oftener be found out ; for if, upon the character and degree of respectability of certain men, we put an implicit confidence in every thing they advance, and such men be liable to error, we follow them in their errors, without appreciating much their talents ; on the contrary, our respect for them increases in a ten-fold proportion, when, after a full investigation and revision, we find them correct.

Had our able professor of chemistry, Doctor Woodhouse, in his experiments on the cooling of water by evaporation*, omitted to give us a detail of them, we would be at a loss to find out where the error lies, and many would be induced to believe that water or other fluids cannot be cooled by evaporation.

In a temperature of $86^{\circ}\dagger$, he found that water contained in vessels calculated to favour an evaporation at their surface, instead of being cooled, was raised from 52° to 80° and upwards. But surely this was not the result of evaporation ; for if in a temperature of 86° we expose water at 52° , far from evaporating, it will condense, and collect the moisture of the ambient air, and by this acquire heat.

But if we take water at 80° , the common temperature of that fluid in the shade, when the thermometer stands at 86° , we shall invariably find, that an evaporation at the surface of the vessel containing the water will reduce its temperature several degrees.

* Philadelphia Medical Museum, vol. v, p. 70.

† Fahrenheit.

We are often, too often indeed, induced into errors by words. The word cooling, as I have already said, means nothing but in relation to a higher degree of heat ; and cooled water, in a temperature of 86° , would be warm water in a temperature of 30° .

At all seasons, and in all temperatures, take water and other liquors, which have been exposed to that temperature long enough to take their standard in it, and you will constantly find that evaporation will cool them. The temperature of the atmosphere and the fluids must be in such a relation to one another, as to produce evaporation ; and authors, in favouring the world with their experiments, ought to be particularly careful in noting exactly the temperatures.

We might as well advance, and prove, by a fallacious experiment, that the sun gives no heat, because water at 52° , exposed to its rays, in a temperature of 30° , loses instead of acquiring heat.

To be correct, however, and to be supported by facts, I instituted the following experiments :

In the beginning of July, the temperature of the atmosphere being 86° of Fahrenheit, I procured some hydrant water, then at 77° ; exposed some of it in several vessels of different materials, one of each kind being wrapped up in a wet cloth, and wetted repeatedly as it dried away. The whole process

was conducted, with great care and attention, for nearly four hours, and the result is reported in the annexed table*.

* Temperatures of the	Water in	Atmosphere in my office, where the experiments were conducted		86°	
		Water kept for six hours in a wash-hand bason in the same office		80	
		Half pint flint tumblers	Naked, standing upon a table	80	
			Coated with fine muslin wetted with water		75 ^b
		Quart flint glass bottles	Naked	80	
			Coated and wetted like the tumbler		75
			Coated and wetted in the same manner, and swung at the end of a three feet line, describing an arch of about 100°		73 ¹ / ₂
		Gallon earthen jars, glazed inside	Naked	78	
			Coated like the other vessels		75
		N. B. Sulphate of soda had been kept in them for some time; they had, however, been well washed before the experiment.			
		Quart queen's ware jars	Naked	80	
			Coated as above		75
		Cedar pail, in which the water was procured from the hydrant	Naked	76	

The result of these experiments induced me to go further, and I hope that an account of another series will not be unacceptable to the reader.

Having coated the bulb of my thermometer, on the same day, with a piece of fine linen cloth, I wetted it with the best alcohol. In three minutes, the mercury fell to 66°; and finding, in a short time, that it was rising, I poured new alcohol on the coated bulb, but never could lower it a single degree below 66°.

July 6th. Between ten and eleven o'clock, P. M. the temperature being 64°, the bulb of the same thermometer, coated in the like manner, was immersed in some of the same spirit of wine that had been used in the former experiment, and swinging it at the end of my arm, so as to describe an arch of about 150° in a second, dipping its bulb every twenty oscillations in the spirit of wine that I held in the other hand, I could not sink the mercury lower than 54°.

Dr. ****, in his *****, tells us (in this he means no harm, for, I am confident, he believes it), that emetic tartar, applied upon the skin, the wrists, or the pit of the stomach (this last is rather the best to scare a timid patient to the purpose), will produce nausea and vomiting. He is quoted by many, because they take his word for it: no one means any harm, I charitably suppose; but they are all deceived, and deceive others.

The trial is, however, so simple and easy, that any one will wonder why the quoter, to confirm the authority of the author, did not try the experiment upon himself and others; for a puke is not such a dreadful thing as not to be encountered.

Now, I give it to the world as a truth, upon which I pledge my character and reputation, that I had children from twenty

July 8th. Temperature of my office 73° , on the naked bulb of the same thermometer, I dropped some of the same alcohol, so as to leave an interval of three seconds between each drop, and the mercury did not fall lower than 59° .

I then coated the bulb, and, carrying on the experiment under the same data, the mercury did not descend below 61° .

On the same day, under the same temperature, I dropped slowly (one drop every second) on the naked bulb of the same thermometer, some of the best ether I could procure, and sunk the mercury to 18° , fourteen degrees below the freezing point.

Although I have been extremely particular in relating the above experiments, I may still have omitted to note some circumstances, which might in other hands be the cause of a different result; for, in repeating my experiments over and over, I found that a good deal depends upon the manner with which the alcohol or ether is dropped: when the mercury has come down below the 25° , if you drop a little faster, it will rise instead of descending. This is easily accounted for.

months to fourteen years, and grown persons, without mentioning myself, repeatedly bathed in a solution of one ounce of emetic tartar in sixteen gallons of water, of a temperature between 86° and 92° , without creating the least nausea, or uneasiness of any kind*.

I have also applied emetic tartar, as I have heretofore published, upon the neck, wrists, and pit of the stomach of myself and of others, who were so kind as to try the experiment, without producing the least disturbance. But do not believe me without trying it fairly.

Another tells us that a jacket lined with bark, worn next to the skin, has cured intermittent fevers; but has not the same disease often been charmed away by mysterious tricks or nostrums? Besides, admitting this to be a constant fact, which we are yet far from granting, would it prove what the gentleman tries to prove by it? We are still ignorant of the seat of the disease that produces intermittents. Several applications upon the skin may, without having recourse to absorption, cure them as well as internal medicines.

A broken limb, confining the patient to his room; a voyage by sea, where, burthened and half dead by the agony of the sea-sickness, the patient can hardly stir from his berth, have, we are told, often cured a bubo, and some other diseases. In this I see no wonder.

But thanks be given, neither to the broken limb, nor to the sea-sickness, but to the confinement and rest; for, nine times

* I have, since writing the above, caused much younger babes to be bathed in a stronger solution of the same, without having perceived the least derangement.

out of ten, when the patient can be kept at rest, the same will happen ; and, on the contrary, will fail nineteen times out of twenty, when an opposite course is persisted in.

The *vix medicatrix naturæ* has been supported and opposed ; but in the whole we see nothing but a contention of words. Name it, however, as you please, it is no less evident that living bodies possess a power inherent in themselves of resisting destruction. That this power may be weakened, or totally impeached, shall not be denied. In the former case, it is in our power to assist it ; but, in the latter, the resources of our art are insufficient.

How numerous are the instances where large abscesses have been discharged through the bowels, vagina, lungs, stomach, bladder, &c. with a proper and strict attention to food, air, exercise, a cheerful company of friends ; and the patients have enjoyed, during a long subsequent life, as good health as before ! How many do we not see recover in spite of a preposterous treatment, called a cure ! The *sic vos non vobis* is often applicable in such cases.

Among the errors in physic, nothing has been, and is still more believed in and supported, than the translation or repulsion of diseases. Among the scare-crows on this subject, is a production written by a French author, which he has named a treatise on *les maladies qu'il est dangereux de guérir*, with this motto, selected from Virgil,

Ægrescit que medendo.

Æneidos, lib. xii, v. 46.

applicable, in its true sense, to a very different purpose.

That the cure of a disease has been attended with danger, we cannot conceive ; but that its mode of cure may be, and is often attended with danger, will be easily granted.

How many wonderful stories have the honour of occupying hundreds of pages, which might be better filled up, to prove the benefit derived from some evacuations, as a blessed *outlet* by which the constitution is freed of noxious humours, which, without such a blessed *evil*, would not fail to create a dangerous plethora !

After such a powerful argument, a civil, dutiful patient cannot help adding a resigned *amen*.

But, to tell the truth, this can hold good no longer than the deceived belief of the patient ; for I have advised the closing of issues that had been open for years upon young and adults, without having perceived the subject in the least affected from the want of them.

I have cured, in this city, by surgical operations, several cases of hæmorrhoids, or piles, by which patients were carried, through a space of five, nine, and thirteen years, to the brink of their graves, and those patients have since enjoyed a state of health superior to all expectations. I have not spilt half a dram of blood by the operation, nor evacuated a single drop by venæsection. I have used no depleting remedies, and no plethora, but a good and healthy one, has been the result*.

* My neighbour, Mr. M. Cowperthwait, a shoe manufacturer, is a remarkable instance of this. Four years have nearly elapsed since I operated on him (assisted by Dr. Hewson) ; and, although it might have been expected that his

Non-menstruating women, we are taught to believe, require venæsection, to prevent a plethora; but where do we see such women becoming plethoric? Do we not rather generally see them enjoy a low state of health, or suffer no derangement from such irregularity, except what they often bring on by officious remedies?

I have seen, I must confess, many lose their menses for months*, for years†, without being in the least the worse for it, and I have objected to blood-letting.

I am the family physician of a widow lady in this city, who is upwards of fifty years of age, and never had any appearance of the menses.

In fact, I have always believed, and found in numerous instances, the suppression of the menstrual discharge to be the effect, and not the cause of disease.

Besides, if we only advert to this, that the menstrual fluid is not blood, but a particular and *sui generis* secretion of the uterus, resembling it to the eyes, we would as well deplete a man in the habit of seeing his wife daily, on his becoming a

sedentary occupation was rather calculated to favour the occurrence of other diseases, he has enjoyed ever since an uninterrupted state of good health.

* This is extremely common, especially in the country.

† I know several in that situation. One of them is of a thin, spare constitution, and is now in her twenty-sixth year. She is the mother of two children. About eighteen months ago, she went through a mercurial course, and never had any appearance of her menses since.

widower ; for surely plethora is to be more dreaded in one case than in the other*.

Diseases and their effects have been so often mistaken for one another, that we ought to be on our guard when we read of cases, reported to corroborate some advanced opinion. The tribe of eruptive diseases, for instance, is such as to puzzle the most observing inquirer, for they often resemble so much one another, and we are so poor in words to denominate them, that many must go under the same denomination.

Hence, all the blame lavished on the repulsion of the itch, especially among the French, from a speedy cure: and it is surprising that such a doctrine should still find supporters. The faculty may thank them for their friendship, but their patients are surely very little or not at all benefited by it.

I have seen patients faithfully submit to undergo, for months, a nauseous, disgusting, and prejudicial to their health course of medicines, for the cure of a simple itchy eruption, from which they might have been relieved in four or five days, without any danger to their health, or the least derangement to their usual occupations.

Many diseases of the skin have, no doubt, been often mistaken for the itch and complaints of the liver, of which they were only a symptom, blamed upon their disappearance ; for I do firmly believe, that any man of observation and experience would no more believe in the repulsion of a bloody nose or a black eye, than in the repulsion of a simple itch.

* I know women subject to the hemorrhoidal flux, who do not perceive the least diminution in the quantity of their menses.

A disease, we will grant, may, by a long continuance, affect other parts, and occasion another disease, but this will never be the result of a speedy cure.

A subject addicted to liquors will often have, and carry to his last days, ulcers on the lower extremities; but when the vital energy has done all its endeavours to save him from dissolution, and its power is exhausted, those ulcers will often heal very rapidly. If he has been using some new remedy, the merit of the cure or the blame of its supposed consequence are attributed to a cause that had nothing to do with either.

A swelled testicle is generally attributed to a translated gonorrhœa, or, in common language, a gonorrhœa stopped in its beginning. But how and where a gonorrhœa can be translated, I am at a loss to imagine.

The fact is, that I have put a stop to a vast number of gonorrhœas in their very beginning, without producing one case of swelled testicles; that this disease has happened after a gonorrhœa had run for a considerable time, without any local application, from simply taking a purge of *acidulated tartrite of potash*; and in several instances, after a long and judicious treatment, it had disappeared for a long time, long enough indeed to insure a complete cure.

A gentleman lately consulted me for (****), who was then suffering from a gonorrhœa that he had communicated to her, sometime before his application to me. He had been cured, he said, was then well, and continued so for some months, during which he was in the habit of coming to me for (****). He went on a voyage to the West Indies, and on his return, upwards of nine months after all symptoms had disappeared, returned to

me with a swelled testicle, so extremely enlarged and painful, that he was unable to walk without being thrown into the utmost agony.

A babe three months old was brought to me, a few weeks ago, with the right testicle enlarged to the size of a small hen's egg.

As it may be alleged that those gonorrhœas which are stopped in their beginning, and not suffered to run at all, are probably not true gonorrhœas, I shall select and relate a case, out of many, that proves it beyond doubt.

A gentleman applied to me with the first symptoms of a gonorrhœa; as he was married, he expressed a desire to be cured in as short a time as might be possibly done. He had had connection with his wife the night before, and was not without uneasiness on her account; although he had not before his connection discovered that he had any running.

In twice twenty-four hours he was perfectly free from any appearance of the disease, and, by continuing the same injection and medicine for about two weeks, never saw any return of it.

In a couple of weeks, his fears were realized, and his wife was severely attacked with the same disease, which lasted for a considerable time. This is unfortunately almost generally the case, when regular women labour under such a disease; their delicacy is always interfering so much, that the appropriated remedies are seldom well, and often not at all, applied.

We are told, however, and I believe it, that, in a number of instances, where a gonorrhœa was stopped by strong injections, a swelled testicle has been the result; but then the whole blame is to be laid upon the irritation produced by the injection, and not upon a repulsion of the disease.

The numberless wonderful stories on the repulsion of diseases, may have a tendency to make our patients cautious, but they are far, very far, from being consonant with the laws of the animal economy.

Our frame being composed of several different systems, performing different functions, tending all to one and the same end, its preservation, we may justly suppose, indeed we see their functions and their diseases alternate with each other; but we can never admit the diseases of the skin to be the same as those of the bones, nor the diseases of the bones to be like those of the membranes; every system, every viscus having its peculiar function, has, of course, its peculiar diseases.

But of all the errors in physic, none has been so pernicious as the tribe of false notions, not only on the diseases of the genital organs, but on their several modes of cure pursued at different periods by different professional men, quacks and others. To enter on such a subject here, would, unavoidably, carry me beyond the limits of this publication; but I am happy to state, that I have in contemplation an original work, by which I flatter myself, that, if Jenner has offered to the world the means of preventing, I might perhaps say of annihilating the small-pox, I shall disclose the means of preventing and curing, as easily as excoriations of the toes and feet from tight shoes,

the so much dreaded and firmly believed, by many, infernal and incurable disease, syphilis*.

Were the laboratory of nature open to us, how few truths would remain extant ! But, since we cannot pretend to such a bounty, let those who attempt to pry into it be scrupulous in their pursuits, and bring nothing to open light, until a repeated close examination of well connected and supported facts can enable them to stand the test to which they will sooner or later be unavoidably submitted.

As my remarks will doubtless be perused by many who will differ in opinion (*and, perhaps, unsupported opinion*), I must conclude by assuring them, that they are not intended to hurt their feelings, nor to show myself superior in knowledge, but only to inculcate the spirit of investigation ; but confident, at the same time, that many will find their opinion to coincide with mine, and want nothing but firmness and independence of mind to express it, happy shall I be if I have gratified their sensibility, and only ask, in return, the same gratification ; for I do firmly believe, and it will, without much debate, be admitted, that unfettering the mind is clearing the road to happiness.

Observations on the Stimulant Effects of Cold. By ARBUTHNOT.

MR. EDITOR,

YOUR last number contains some “ remarks on the agency of cold,” which are *intended as a reply* to my queries on

* Called, by the French, *grosse vérole*.

that subject. The author of these remarks proposes “a little dispassionate controversy;” and, if he thinks he can command *his* temper, I trust he will find no cause to complain of mine.

Among his preliminary remarks there is one which claims attention. “How it is, I shall leave for *some genius more arrogant, or better qualified than myself*, to determine; but so it happens to turn out, that my disbelief of Arbuthnot’s doctrine is predicated on the very grounds which it appears have given rise to his conviction of the truth.” For fear, however, that no “genius more arrogant, or better qualified,” is to be found, the writer himself attempts to explain the difficulty, by asserting “one of two things must be true: either my comprehension is dull, or his judgment is defective.” *Palmam quæ meruit ferat!*

Lord Bacon, in his invaluable treatise on the advancement of learning, remarks, “that it is almost necessary, in all controversies and disputes, to imitate the wisdom of the mathematicians, in setting down, in the very beginning, the definitions of our words and terms, that others may know how we accept and understand them, and whether they concur with us or no; for it cometh to pass for want of this, that we are sure to end there where we ought to have begun, which is in questions and differences about words.”

In pursuance of this plan, I commenced my first paper with the definition of stimulus, advanced by Dr. Cullen, and, as far as I know, generally admitted. The “Constant Reader,” without objecting to this definition, confesses that cold produces motion and sensation, and immediately draws the strange, unwarrantable conclusion, that cold is a sedative! His words are “Now I conclude, from the motion and sensation which

usually follow the application of cold, that it is a debilitating, and not a stimulating agent." This is a curious mode of reasoning; reduced to syllogism it stands thus: *That which produces motion and sensation is a stimulus. But cold produces motion and sensation. Therefore cold is a sedative!*

Your correspondent proceeds to defend his inference by "this good reason: though sensation and motion do for the most part follow the application of cold to our bodies, yet I challenge Arbuthnot to prove, by a successive and lucid consideration of all the intermediate changes which occur between the impression and what he calls its effects, that cold is possessed of an inherent power to excite either sensation or motion."

"This good reason," Mr. Editor, is very unlike all the good reasoning I have heretofore met with. The sentence conveys, in fact, no meaning; for no change can intervene between a cause and its effect. The *change* is itself the *effect*. As nearly as I can guess the writer's meaning, it is this: that certain mysterious changes intervene between the application of cold and its *obvious* effects. If this be the opinion of your correspondent, he must investigate for himself, and, by his own *lucid consideration*, find out, and tell us, what those changes are.

My first query remains unanswered. I repeat it, for a better and more conclusive reply: "*Is Cullen's definition erroneous, or is cold a stimulus?*"

The second question proposed for the consideration of those who deny to cold a stimulant operation, is founded upon the act, that certain stimulating sounds, mental impressions, and

other causes confessedly stimulant, produce cutis anserina, and that cold occasions precisely the same effects. I find, however that "A Constant Reader," though fond of analogies himself, has not noticed the striking similarity between the operation of cold and the other causes of rigor; but "because universal experience asserts warmth to be a stimulus, then cold must be a sedative." And so, forsooth, since facts cannot prove it, assertions must. The "Constant Reader" affirms that "there is no more vital action, or contraction*" in the scrotum exposed to cold, than in a pouch of gum elastic. This is a round assertion, and directly contradicted by common sense and common observation. Let the "Constant Reader" apply a lump of ice to a living and a dead scrotum, and also to "a pouch of gum elastic;" the result he will have the candour to communicate in his next essay, and, in place of *assertion*, state a *fact*.

In reply to my third question, respecting the shivering and muscular exertions produced by cold, we are gravely told, that a sedative cannot produce these effects "by its own inherent agency." How then, in the name of wonder? The answer is, "by a well known law of the animal economy"!! It appears, then, that a special law has been enacted in favour of cold, which enables cold, being itself no stimulus, to exercise all the prerogatives of this class of agents! However "handsomely descanted on by the author of *Zoonomia*," this is not to be mistaken for logic. Let us see how the principle is illustrated. A drop of water falls into the wind-pipe, and excites "convulsive efforts of the pectoral and intercostal muscles, and diaphragm." Just so we are informed cold operates in producing the exertions of the "subcutaneous muscles" in

* His addition of the phrase "from stimulus and excitability" is an unmeaning one, because "vital action" can result from no other source.

shuddering: that is to say, the drop of water in the wind-pipe is not a stimulus, but produces a painful sensation, which sensation is the stimulus exciting the convulsive actions of the muscles. In like manner, when the body is shivering from cold, the cold produces no shivering, but a *sensation*, which sensation is the stimulus! “Prithee, what kind of philosophy is this?”

The muscular exertions, we are told, are “excited to relieve pain.” Then they *are excited*: now, whatever *excited* them must be a stimulus, for to excite is to stimulate, excitant and stimulant meaning precisely the same thing. To say that cold produces “sensation” before it occasions shivering, if admitted, only proves what may be proved of all other stimuli, that it acts on the nerves as well as on other parts. In fact, to excite sensation is to excite action, because sensation is the action of nerves, just as contraction is the action of muscles; and hence Dr. Cullen has included, in his definition of stimulus, the power of producing sensation.

It is really curious to notice what singular notions are adopted by those who resolve, at all events, to prove cold a sedative. They stop at nothing, but deny the very evidence of their senses: *e. g.* “Ask a peasant what excites the sensation of cold when his hand is thrust into iced water, and, being altogether ignorant of the *changes which occur in the internal part of the organ*, of the animal heat extracted, and of the *sensation-producing-point-of-excitement* which is left, ten chances to one if he does not reply, the iced water.” And ten chances to one he is right. “*Query*,” who is most “ignorant,” he who believes iced water to excite the sensation of cold, or he who, to support some favourite dogma, denies it?”

In one page "A Constant Reader" denies that iced water can excite sensation, and, in the next, not only confesses it, but gravely explains the muscular exertions produced by cold, by attributing them to this sensation! Now, "I always thought for any thing to be, and, at the same time, not to be, according to strict accuracy of logical reasoning, amounted to an inconsistency!" His notions of *sensation*, which, with the assistance of *inherent agency*, *intermediate changes*, and Darwin's *laws of the animal economy*, were intended to help him out of a "quagmire," only sink him the deeper in it. In his future lucubrations, I would recommend it to "A Constant Reader" to avoid all such phrases as tend to obscure instead of enlightening; to perplex, not to elucidate. Let his aim be,

"Non fumum ex fulgore, sed è fumo dare lucem."

"My ingenious adversary," finding himself somewhat puzzled in defending his doctrines by the received laws of reasoning, very bravely opposes them, and substitutes a method better suited to his purpose. He introduces a new rule of philosophizing in place of one well established. I shall enable our "multifarious readers" to compare them.

<p>"When two causes produce precisely the same effect, is it not perfectly just to conclude that both act in the same way, and therefore that both are stimulants, or both sedatives?"</p>	<p>"Opposite causes may produce perfectly the same effects, and different effects may proceed from the same causes of vital action."</p>
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CONSTANT READER.

ARBUTHNOT.

"A Constant Reader" attempts the defence of his paradox, by declaring it to have "received the sanction of the scientific of every country." No scientific man ever sanctioned it; and I challenge the writer to produce "the page and volume of that work which acquainted him" with the maxim. He proves,

in the very next paragraph, that he has completely mistaken the meaning "of the scientific of every country," for he asserts, that unless his doctrine be true, "venesection must be powerfully stimulant, diaphoretic, and soporific, because in DIFFERENT CONDITIONS OF THE SYSTEM, it not unusually occasions an increased vigour of the pulse, sweat, and sleep." Now the paradox is explained. The scientific are aware, that the "states of the system" influence materially the effects of every application, and therefore they consider these states of system among the *causes* of all such peculiar effects as have been noticed. Let the "Constant Reader" recollect that we now speak of the effects of cold, and other agents, under *similar* "conditions of the system," and finding the effects similar, we conclude, and, I think, very justly, that cold is a stimulus. Let the case be stated. A man in good health immerses his feet in cold water; cutis anserina, and rigor, are excited. He places them, under similar circumstances of health, in hot water; precisely the same effects result*.

Your correspondent, Mr. Editor, strives hard to ridicule what he calls "a fine sample of Arbuthnot's strict accuracy of logical reasoning," and the "philosophical maxim" on which it is founded. This maxim, which his superior wisdom decries, is sir Isaac Newton's, and is to be found in the various systems of philosophy, "as familiar to every school-boy as A, B, and C." I shall quote two of Newton's rules of philosophizing, as they afford an excellent lesson, which "A Constant Reader" cannot learn too soon, or too well.

* Of a variety of stimulating causes which produce this effect, I may mention, "an immoderately *hot* or *cold* bath," "section and inustion," "abscesses." For a more detailed account, the "Constant Reader" is referred to James' Med. Dict. Art. Rigor.

Regulæ Philosophandi.

I. Causas rerum naturalium, non plures admitti debere, quam quæ et veræ sint et earum phænomenis explicandis sufficientiant.

II. Ideoque effectuum naturalium ejusdem generis, eadem sunt causæ*.

In attempting to answer another of my queries, "A Constant Reader" accuses me of the inconsistency of asserting "a thing to be a stimulus, and at the same time not to be a stimulus." This is uncandid, and nothing I have said can, without the grossest perversion, be made to convey this meaning.

It is true I have ventured to trust (and perhaps too much) to medical testimony. I have believed the experiments of Stock, and Currie, and Klapp, to be fairly reported. The results differ, and I have said, that of effects so opposite as those on the pulse, "one *at least* must have been stimulant." I repeat it, and declare, that all those experiments convey ample proof that *new actions* were *excited*, and of course that cold is a stimulus.

By a hop, skip, and a jump, my "ingenious adversary" has passed over several remarks, which I supposed important subjects of inquiry. The effects of cold in asphyxia have arrested his attention, and these he has pronounced decidedly sedative,

* Newtoni Principia, lib. iii. In Nicholson's Philosophy the second rule is thus translated: "And therefore effects of the same kind are produced by the same causes." Introduction, p. 6. The maxims of Newton and "A Constant Reader" are as opposite as the poles.

because, in one particular instance, asphyxia results from an "oppressed state of the system," produced by the excessive stimulus of fixed air. He says that, in speaking "of the necessity of violent stimuli in asphyxia generally," I have expressed "an opinion in contradiction of not only just impressions of the pathology of that morbid state of the system, but in direct opposition to the most approved and successful modes of practice of the present day." This is a most erroneous statement; for whatever may be my "impressions" of the pathology of asphyxia, it is an incontrovertible truth, that in "*asphyxia generally*" powerful stimuli are demanded, and constitute the "most approved" and "successful" practice.

"Relative to suspended animation from drowning," A Constant Reader informs us, "authors are somewhat divided. A few recommend violent stimuli, but there are many who rank high in their profession, that denounce this practice." "A Constant Reader" has not quoted, or even named, one of the authors who rank high in their profession, and denounce stimuli in asphyxia. He is the first author of *any* rank, whom I have met with. It were easy to prove, that *many* are in favour of the use of stimulants, of powerful, violent stimulants; and few, very few, *if any*, against it. Sauvages relates cases cured by *hot ashes* and *very hot cloths**; and the numerous treatises, on this

* "Vidi puellam quæ, cum è puteo in quem se projicerat extracta fuisset, pro mortua habebatur, utpote omni motu, sensu, pulsu, calore, destituta; ea vero suam Illustr. Dom. Gibert, præceptoris mei in praxi colendissimi, in lectulo reposita, *linteis calidissimis omni minuto renovatis*, tecta demum ad sese rediit." *Sauvages de Asphyxia Immersorum*. At the first glance, the idea of administering sedatives in asphyxia must appear absurd. What are sedatives? They are, according to Cullen, "the medicines which directly, and without evacuation, diminish the motions and powers of the human system." Now is it desirable, is it possible that any "medicine should" "diminish the motions" of

subject, all unite in recommending stimuli of various kinds ; the practice has been adopted and made public by *all the Humane Societies in the world*, from no one of which “ A Constant Reader” need hope for a gold medal (which, next to my respect, he considers a pretty compliment) until he changes his notions.

I am called upon, by a splendid promise of homage and respect, to produce for the “ Constant Reader,” “ a single well-attested example of a revival from suspended vital action occasioned by excessive cold, or fumes of charcoal, by the use of such powerful stimuli as coals of fire, electricity, and *many others.*” We are told by “ A Constant Reader,” that the best remedies are “ cold water, bleeding, cupping, and *other debilitating agents*, hitherto in use.”

A case is related in the 6th volume of the Medical Essays, of a “ man, dead in appearance, recovered by distending the lungs with air.” The mephitic air of a coal-pit suffocated him. He was taken out to all appearance dead. Inflating his lungs immediately produced the action of the heart, after it had been suspended more than half an hour. Was this man cured of asphyxia by a sedative ? His system must have been in an oppressed state. After action commenced he was bled. Can any one *assert* that bleeding cured this patient ?

a man who is *motionless*, or the powers of a man, who, until roused by stimulus, is unable to move one single fibre of his body ? The absurdity of the proposal is not diminished by the *assertion*, that “ bleeding, cupping, and other debilitating agents,” are the best remedies in asphyxia from *fixed air*, because these *alone* never cured such a case. I assert, and my assertion I am ready to prove, that *pure air* is a stimulus, without the aid of which no other remedy can succeed. After action is excited by this and cold, then bleeding is useful ; but then the case ceases to be asphyxia.

In asphyxia from cold, warmth and gentle frictions are remedies often successful, and so likewise are the affusion of cold water and applications of snow. "Warm wine, brandy, theriaca, cinnamon water," are among the remedies recommended by Sauvages in the treatment of "asphyxia congelatorum." It is remarkable that the physicians in the north of Europe, who recommend the use of snow and cold water, also use *frictions*, which are certainly stimulating.

In syncope, cold water and volatile alkali are the most successful remedies. Syncope is produced by certain odours, disagreeable sights, sounds, passions, and emotions, as joy, fear, anger, inanition, worms, hemorrhagy, gangrene, indigestible substances in the stomach, and many other causes, from all which the "Constant Reader" may select such as he supposes sedative, and such as are stimulant. He will find that syncope, when produced, is a unit, and that among the best remedies for it are cold water and volatile alkali: either will cure it, or both combined. Both then must be stimuli, or both sedatives. Asphyxia, like syncope, when produced, is a unit, and whatever excites vital action when it is suspended, must be confessed, and has been proved, a stimulus.

"A Constant Reader" denies the stimulating operation of cold on the absorbents, because blood-letting produces absorption. "Witness the practice of some of our first physicians in the treatment of dropsy and other *effusions*." Which of our "first physicians" recommends bleeding in dropsy, for the purpose of promoting absorption? The common opinion among the "first physicians" of my acquaintance is, that blood-letting relieves the morbid action of the vessels in dropsy, and thus prevents the secretion or "effusion" of water. The styptic effects of cold are answered in the same manner. Venesection

stops hemorrhage: granted. Whatever produces the contraction of a bleeding vessel, stops the bleeding. Venesection does it by diminishing the contents of the vessel. Cold effects it, as other styptics do, by stimulating to contraction. A lump of ice, or a cold key, applied to the neck or scrotum, has often, as I have already stated, put an end to epistaxis. Here is action from a remote impression, and if sugar of lead be a stimulus so is cold.

To conclude. The effects of cold exhibit a greater variety of proofs of its stimulant agency, than those of any one article of the materia medica. Its occasional "debilitating" influence is no more a proof that it is a sedative, than the debilitating effects of heat, of opium, of digitalis, of many other stimuli, all of which produce debility, and it is as certainly "direct" in the one case as in the other. If cold acts directly as a sedative, so does heat, and so does fox-glove. If cold be an *indirect* stimulus, it is as easy to prove the same thing of heat. I can never believe that effect to be "indirect" which my senses tell me is immediate.

I must beg you, Mr. Editor, to excuse the length of my communication, which I fear your readers will censure, because it excludes from your pages the more valuable matter of practical histories.

With sentiments of respect, I remain

Your obedient servant,

ARBUTHNOT.

Foot's Account of an Anomalous Disease, in Litchfield County (Connecticut). In a Letter from Dr. WILLIAM FOOT, to Dr. MALACHI FOOT.

New-York, September 8th, 1808.

SIR,

I FORWARD for your Museum the inclosed communication. The endemic, whose character the writer gives, such as it was at its ingress and limited prevalence during the last winter, continued to spread and to assume a more malignant form with the progress of the vernal season. Its more extensive diffusion and augmented malignancy, as was anticipated, kept pace with the progress of the summer heats. Its extension, from its commencement in Litchfield county, has been towards the interior and eastern parts of Connecticut, and I have recent information of its having appeared in some parts of Vermont. I have taken means to obtain an early and detailed account of its character and progress this summer. This, together with any subsequent communication I may make on the same subject, I shall beg you to consider as a memento of the satisfaction with which I peruse, and of the estimation in which I hold the Medical Museum.

Respectfully yours,

MALACHI FOOT.

Dr. John R. Cox.

SIR,

YOUR experience of the servitude attendant on country practice, I trust, will render unnecessary any apology for delaying the information you some time ago requested.

The disease of which I wrote you a cursory notice, last winter, is as yet anomalous among us. Some have given it (but improperly) the name of *spotted fever*. Nor I am not disposed to attempt its interpolation among any of the nosological arrangements of the day; and the less so as I have long been convinced, that the nomenclature of diseases has little to do with their judicious treatment, founded on a careful and discriminating view of their symptoms.

From what I can collect, the first case occurred in the town of Winchester, in this county, in April, 1807. It prevailed there through that and the two succeeding months. About 40 persons had it, and it proved mortal in ten of that number.

It made its appearance in this town early in December last, and prevailed until near the close of February. In my letter to you, dated the last of December, I mentioned my having had 20 patients with it: since that there have occurred 130 cases, making in the whole 150 who have suffered some degree of the disease. One-third of these laboured under a severe and threatening form of it, the other portion were but slightly indisposed. Seven died, one within 48 hours, one in 27 hours, one in 15 hours, and one in less than 4 hours after the attack.

My pathology of this non-descript and novel complaint, I fear, will be but imperfect, though I have taken much pains to compare its character here with the verbal description I have been favoured with from my medical brethren in the neighbouring towns. The introduction, progress, and order of the symptoms exhibited in different subjects much variation. In general, the first departure from a healthy state is perceived in the presence of lassitude and a sudden prostration of strength. This is followed by slight rigors, pain more particularly acute

on motion, in the back of the neck, darting in some cases anteriorly to the trachea, at other times through the head; pain in the arms, loins, stomach, or lower extremities, and sometimes in one thigh or foot. In some, nausea and puking, in others, a delirium is the most conspicuous symptom from the earliest onset, and always indicated a violent degree of the disease and much danger. In those who died, coma, stertorous breathing, and frothing at the mouth closed the scene. The eruption was not always present in the slighter cases; in those that proved mortal it was an invariable symptom: in some it made its appearance at the commencement of the disease, and in one of my patients occurred after death. In some cases the eruption was of the miliary kind, in others more diffused, resembling erysipelas. Dilated pupils and redness of the albuginea denoted danger. With respect to the arterial system, in one hundred cases which came under my notice, the pulse was asthenic, and every symptom indicated a great and sudden prostration of the "energy of the brain and nervous system." The degree of heat rarely exceeded the healthy standard, and fever constituted a very inconsiderable item of the complaint.

Persons most exempt from this disorder are adult males, and those most liable to its attack are children and females under the age of puberty. It exhibited all the grades between slight indisposition, requiring no medical treatment, and the most malignant pestilence. The convalescence was universally slow; and, in those who suffered a high degree of the disease, it was always attended with a severe pain in one or both legs, and in some they were very much swollen.

On the *methodus medendi* I can speak with some confidence, and no less satisfaction. This complaint, as yet, is more remarkable for the novelty of its character than for its mortality.

And yet, cases do occur, which run their course with a rapidity not exceeded by the most malignant cases of Asiatic plague or American pestilence, and where the most timely and judicious application of remedies is wholly unavailing. Where there was evidence of the presence of morbid matter in the stomach, I evacuated with calomel and jalap; but many times the urgency of the more alarming symptoms do not admit of losing time. A free diaphoresis, accomplished early and continued, rarely fails of relief, and often removes every vestige of a commencing delirium. While my medical brethren have differed in the manner of accomplishing this desideratum, all agree in ascribing to it the most salutary effects. Its advantages were not diminished by the application of heat; but in my practice was a necessary attendant, and was accomplished by flannels wrung out in a hot decoction of the boughs of the hemlock tree (which grows plenty in this town), applied to the whole surface, or by steam conveyed into the bed by means of a wooden tube leading from a kettle containing a decoction of aromatic herbs. This latter method was communicated to me by Dr. Woodward, of Torrington. Blisters, wine, a strong decoction of rad. seneka, sinapisms, opium in various forms, and the whole round of stimulants, durable and diffusable, were used with pleasing success. I have never ventured to open a vein in this disease; but I am credibly informed, that venesection was tried in some of the neighbouring towns, but with discouraging success. *I have never witnessed a disease in which the powers of life are so suddenly and entirely prostrated.* So torpid were the cutaneous vessels, that in all cases I found a free sweat of difficult attainment, and often not to be accomplished until the lapse of two or three hours, when the means above mentioned were aided by internal diaphoretics, medicine, and a free use of diluent drinks.

I informed you, in a former letter, that this complaint was preceded, here, by a long continuance of easterly winds, accompanied by a damp and foggy atmosphere: in this, my medical brethren in this quarter agree with me. This, however, is not invariable. In this, as in other epidemics, the influence of exciting causes supervening predisposition was evident. These were, as usual, fatigue produced by violent exercise, strong mental impressions, intemperance, and exposure to cold. Three or four cases have occurred in this town within a week, one of which I am now attending, and I fear will prove mortal. It has of late and is now prevailing, to a considerable extent, in Burlington, Bristol, and Canton, in Hartford county, and in North Hartford in this (Litchfield) county, and I learn proves mortal in a larger proportion than was the case here last winter. There is nothing peculiar in the local situation of these towns. Goshen occupies a bleak and elevated ridge. The influenza prevailed here in August and September last, and was universal.

Your affectionate brother,

Dr. Malachi Foot.

WILLIAM FOOT.

Goshen (Litcheld county, Connecticut), June 13th, 1808.

Account of the Oil of the Chenopodium Anthelminticum. By
Dr. HENRY WILKINS.

Baltimore, September 23, 1808.

DEAR SIR,

I PROMISED, some time since, to give you a short history of the essential oil of the chenopodium anthelminticum of Linnæus, with its introduction and character in Baltimore.

The vulgar names of this plant are, wormseed and Jerusalem oak.

Although this preparation is a new prescription here, yet it is well known that the herb and seed of this and other species of chenopodium have been in use a long time for worms and other disorders.

From Tragus and J. Bauhine we learn, that the chenopodium bonus henricus was used by the common people of their country to wash foul ulcers, especially such as had worms in them; and that a poultice or bundle of the herb was tied to the necks of cattle that were afflicted with worms. The transition from the external use to the internal was very natural, as well as from one species to another; though I suspect that the use of the chenopodium anthelminticum, now in question, took its rise in Virginia*, where it providentially presented itself to the wants of a new colony, to substitute the bonus henricus and other anthelmintics used in Europe, and then not easily obtained in America. It was in this way, I conceive, that the seeds became a family prescription, particularly in this state and Virginia. To my certain knowledge, they were tried freely and extensively the last thirty years; but, from the enormous doses of the seed required, or from the use of calomel, spigelia, and other anthelmintics, the use of this herb was nearly laid aside, when the essential oil happily succeeded. I may observe that, in foreign practice, the use of extracts and essential oils have obtained a credit that we either disregard, or refuse on account of the expence; and the essential oil of chenopodium has long had a place in the shops of

* The chenopodium anthelminticum was not used in London otherways than for pulmonary complaints, in Salmon's time. See the article Botrys, New London Dispensatory, anno 1667.

the French, Germans, and, perhaps, English, with the great mass of supposed anthelmintics, without their knowing its full merits*. The introduction to such extensive use in this city is so purely accidental, that it will not add to the fame of any medical name.

A citizen, who had been confined for nearly two years, became, in addition to his other disorders, afflicted with worms.

Among the numerous prescriptions recommended to him, the essential oil of chenopodium was proposed and adopted. By the use of this he discharged a large number of worms, and was enabled to re-appear for a while in public. He employed his time in publishing, to a numerous acquaintance, the good effects of this medicine, and with so much earnestness and success, that it met with a general trial, first in the family way, and then among the physicians. Not being disposed to believe, hastily, the reports in circulation, I made the following experiment: Twenty-four separate drams of the oil were prescribed to twenty-four patients whose symptoms indicated worms, and from about one-half of the patients worms were discharged, if I may credit the testimony of the nurses and attendants.

This experiment alone established the character of the oil with me, and I have ever since preferred it as the most certain, as well as the most innocent anthelmintic. The result of domestic and medical use has been equally flattering. It has been in general use at Baltimore for three years past, in which time it has been employed in almost every family with undi-

* The drug shops are furnished with a great variety not found in the Pharmacopœia.

minished reputation. It scarcely happens that a good medicine is solitary in its application. In various instances, where parents have erroneously supposed worms to exist, this fine stimulating oil has removed general debility, indigestion, and cholic, with various other unsuspected disorders, and has restored health to the little patient. In many instances it has stopped intermittents in children ; and, when we consider that the external use has not yet been resorted to, there is great reason to believe that it may be extended to various disorders incident both to children and adults. It certainly promises as fair to be useful as any other essential oil, for hysteria, chorea, convulsions, or palsy ! In my experiment, I did not regulate the doses in the manner I would now recommend, which is to allow about one drop and a half to each year of the child's age, till nine drops are required ; beyond which it may probably be imprudent to extend it, for any age, if the oil is genuine.

The oil should be dropped on a lump of sugar, and grated into as much water as it will render highly pungent, taking care, with young children, not to make it too stimulating. This quantity should be given on an empty stomach, twice a day, till half a dram or a dram is consumed, when a gentle purge of castor oil or calomel and jalap should be administered. Having stated the introduction and reputation, I may here add the appearances and qualities to be expected of genuine oil of chenopodium : *Of a light straw colour, possessing much of the odour of the plant, very pungent to the tongue, and permanent.* The method of distilling it is to take off the racemes entire, and distil them with as gentle a fire as will bring over the oil. The seed ripens in September. Some care is necessary in gathering the plant, to avoid the *chenopodium muriale*, which is common in the same places ; but the

shape of the leaves and the want of aroma in this latter species, will be sufficient to guide the most ignorant. I have known two instances of boys being convulsed for an hour, by swallowing the seeds of the chenopodium muriale.

I am, sir, yours, &c.

HENRY WILKINS.

Dr. John R. Coxe.

A Catalogue of some American Minerals, which are found in different Parts of the United States. By ADAM SEYBERT, M. D. member of the American Philosophical, and of the Royal Societies of Gottingen.

Continued from page 159.

13. *Mica. K.*

Mica. H.

Glimmer. W.

THIS mineral is found, of various colours and shapes, in the vicinity of Philadelphia. Some elegant hexangular plates of it were found a mile and a half west of Germantown. In this mineral, New Hampshire rivals the world; it is there found in very considerable sheets, which readily separate into the thinnest laminæ. They are transparent, and are made use of as panes to magazine lanthorns, and for making lamp chimneys. During the revolutionary war it was employed as a substitute for window glass.

14. *Felspar. K.*

Feldspath. H.

Feldspath. W.

Felspar, as a constituent of our *granite*, is very generally diffused; it exists in masses more or less considerable. I have found it crystallized in *granite*, near Chester, Delaware county, and in that which lies scattered on the surface of Chestnut Hill, ten miles north of Philadelphia.

15. *Porcelain clay*. K.
Feldspath argiliforme. H.
Porcellanerde. W.

Porcelain clay, of exquisite beauty, of the whiteness of snow, and of a very fine texture, occurs in large quantities on the banks of the Connecticut river, Connecticut, and on those of the Savannah river, Georgia.

16. *Common clay*. K.
Argile glaise. H.
Gemeiner thon. W.

Pipe clay abounds in the neighbourhood of Burlington and Bordentown, New Jersey, on the banks of Doe creek, and near Newcastle, Delaware.

Common potter's clay forms a considerable part of the soil upon which the city of Philadelphia is built. This clay burns of a dark red colour, and is valuable for making *bricks*: our workshops furnish common pottery to many of the neighbouring states.

Variegated clays abound near Bordentown, New Jersey, and on the banks of *Red Clay creek*, Delaware.

Much of a dark reddish-brown-coloured clay is found near the borough of Lancaster, Pennsylvania. Its fineness, and its habitudes in the fire, are sufficient to recommend it. I have seen some wares fabricated from it, which, in texture and cohesion, rival those of Wedgewood.

17. *Slate clay.* K.

Argille schisteuse impressionnée. H.

Schieferton. W.

Strata of *slate clay* traverse different districts in the state of Pennsylvania; it occurs abundantly near Northumberland: the vegetable impressions which it bears are well defined. I do not know of *coal* having been discovered in this neighbourhood.

18. *Bole.* K.

Bol. H.

Bohl. W.

Bole, which, on account of its colour, smooth and polished agate-like surface, may be ranked with the true Lemnian earth, is found near Madison's cave, Virginia.

Coloured clays (ochres), red and yellow, abound in the United States; both kinds are found near the city of Baltimore, Maryland. Yellow, proper for the painter, exists in very large quantities near Fort Allen, Northampton county Pennsylvania, and at Batsto, New Jersey; which, when exposed to heat, assumes a beautiful red colour. Red ochre is found near Easton, Pennsylvania.

19. *Argillite*. K.
Argile schisteuse. H.
Thonschiefer. W.

Quarries of slate have lately been opened in Pennsylvania and New York, and their contiguity to navigable rivers has rendered them of much service to the inhabitants of our cities. Slate roofs are now generally preferred to those of shingles, and for this purpose the Pennsylvania slate answers remarkably well; that which I have seen from New York does not separate into laminæ so readily as the former.

The *alaunschiefer* of Werner, which is a variety of argillite with *pyrites* and bitumen, abounds in many of the western counties of Pennsylvania. It is matter of surprize that these *aluminous ores* are not employed in the making of alum in our country: the specimens which I have seen promise much to the undertaker; the operation is easy, and the article in great demand for the arts.

20. *Green earth*. K.
Grünerde. W.

Haiüy considers it as a variety of chlorite, and terms it *talchlorite zographique*.

Specimens of this mineral, which much resemble that found near Verona, in Italy, were brought from the neighbourhood of Imlaytown, near the Pines, New Jersey. We have every reason to suppose that it might be employed with advantage by the painter, and I am informed that it exists in large quantities.

21. *Basalt*. K.*Basalte*. H.*Basalt*. W.

Some very regular prisms of *basalt* have been discovered in the neighbourhood of Salisbury, North Carolina: these specimens being well formed, and of a shape to adapt them for the purpose for which they were apparently employed, gave rise to the unfounded supposition of an artificial wall having been raised with them at a very early period: it only needs a little investigation, and a comparison with what exists in other countries, to satisfy ourselves of the error.

This mineral occurs at the falls of the Passaic river, and some specimens have been found near Flourtown, twelve miles north of Philadelphia. These last were imbedded in a stratum of *gravel*.

22. *Strontiane sulfatée*. H.*Celestin*. W.

The combination of strontian earth and sulphuric acid was not known to Mr. Kirwan, when he published his System of Mineralogy.

A German mineralogist, by the name of Schütz, discovered this mineral near Frank's Town, Pennsylvania. I have made several efforts to procure specimens without succeeding. I have seen the Pennsylvania, in the collection of professor Blumenbach, of Gottingen: it was a part of that which Mr. Schütz carried to Europe. Perhaps the notice of this traveller may enable some one to furnish specimens for our cabinets of natural history. He says "it is found on the *Baley Moun-*

tains, Franks township, Huntingdon county, 176 miles from Lancaster, where it forms layers of one inch in thickness, between laminæ of a brownish grey slate." Professor Blumenbach, instead of "*Baley's Mountains*," notices the Bald-eagle Mountain.

23. *Baroselenite*. K.

Baryte sulfatee. H.

Schwerspath. W.

This mineral is as a *gangue* to the galena which is found near the Perkiomen creek, Montgomery county, Pennsylvania. It accompanies the lead ore in Austin's mine, Virginia; and, with carbonat of lime, it adheres to *grey copper ore*, near Liberty Town, Maryland, and is found with *green carbonat of copper*, Cheshire, Connecticut. I have been informed of some specimens having been discovered in New Jersey; I do not know the county. In no case have I seen regular crystals of this mineral.

24. *Liver-stone*. K.

Baryte sulfatée fétide. H.

Schwer-Leberstein of Blumenbach.

This mineral is not described by Jameson, in his System of Mineralogy, which is professedly Wernerian. The same may be remarked of Lenz, another pupil of Werner.

It is lamellar and compact, of a lead-grey colour; the former is highly metallic on the fresh fracture; when rubbed, they emit a strong bituminous odour. They abound in Albemarle county, Virginia. This mineral is found near Kongsberg, in Norway, accompanying *native silver*. I have

not observed any metallic matter connected with that from Virginia, but am willing to believe that it is a strong indication of the presence of some valuable metal.

25. *Limestone*. K.

Chaux carbonatée. H.

Kalkstein. W.

Under this head we may consider limestones of every description. Strata occur in most of the United States ; it is unnecessary to particularize. They are found of various degrees of hardness ; whilst the softer are made use of to supply our lime-kilns, those of a finer texture are capable of receiving a very fine polish, and, under the term of *marble*, are employed for various purposes, and especially to ornament our dwellings. Philadelphia is fortunate in being near to many quarries of excellent marble, much of which has been exported. I have seen some specimens of marble found in York county, which approach those allowed to be the pride of Italy.

26. *Calcareous spar*. K.

Chaux carbonatée. H.

Kalkspath. W.

Rhombs of calcareous spar are found in veins in our limestone strata, in Montgomery and Lancaster counties, Pennsylvania : they for the most part are opake. I have seen some from Kentucky, which in every respect equal those which are usually distinguished by the name of *Iceland crystal* : they also possess the power of *double refraction*. Carbonats of lime, variously crystallized, were found in Schuyler's copper mine, near Newark, New Jersey.

An amber-coloured, semi-transparent, fibrous carbonat of lime abounds in Cumberland valley, fifteen miles from the town of Bedford, Pennsylvania.

27. *Stalactite*. K.

Chaux carbonatée concrétionnée. H.

Kalksinter. W.

Many caves have been discovered in the limestone districts of the United States. I have visited two in Pennsylvania. Kentucky abounds with them, and we have descriptions of some which have been examined in Virginia. That termed *Wier's cave*, from the name of the proprietor, situated about fifteen miles from Staunton, Augusta county, Virginia, in beauty, variety, and extent, is second to none of which descriptions have been published, not excepting the celebrated *grotto of Antiparos*. We have reason to believe that its description will soon be attempted.

The sides and ceilings of the different apartments are encrusted with calcareous matter ; and, from the latter, numerous stalactites hang pendant over the head of the visitor. To describe their various shapes would require the most fruitful imagination, and a *painter* of the rarest talents. They are generally of the whiteness and semi-transparency of the finest alabaster ; others have their surface coated with a ferruginous crust, whilst some are covered with numerous crystals. Such as have assumed the tuberoso form are particularly elegant.

28. *Swinestone*. K.

Chaux carbonatée fœtide. H.

Stinkstein. W.

A variegated carbonat of lime, which, when rubbed, gives forth a highly bituminous odour, occurs in considerable bodies near Aaronsburgh, Pennsylvania. It receives a tolerable polish, and hence might be improperly employed as marble in our buildings.

29. *Gypsum*. K.
Chaux sulfatée. H.
Gyps. W.

This very useful combination of lime and the sulphuric acid has been reported to exist in the states of New York and New Jersey. At Niagara it is found in the calcareous rock which constitutes the fall, but in small quantities. A plentiful supply of it has been discovered near Abingdon, Virginia, on the borders of the river Holston; here it is in the form of very minute indeterminate crystals, which compose a mass more or less compact. Near to Preston's salt-works, in Virginia, an elegant fibrous gypsum, with the lustre of pearl, is found.

30. *Chlorite*. K.
Talc chlorite. H.
Chlorit. W.

a. Earthy chlorite occurs in Chester and Delaware counties, Pennsylvania. Near the Warwick iron-works, in the former county, sulphuret of iron, in the form of veins, runs through the substance of this mineral. That from Delaware county is a transition to *green talc*.

Much of this substance has been discovered in the neighbourhood of Troy, New York, and I have a specimen of it from North Carolina.

b. Slaty chlorite occurs abundantly in Montgomery county, Pennsylvania, bordering on the Schuylkill, about twelve miles from Philadelphia: numerous crystals of octohedral iron ore are imbedded in it.

31. *Common talc.* K.

Talc commun. H.

Talc. W.

Talc, of a dark green colour, is found in Delaware county, Pennsylvania, and in the neighbourhood of New York.

32. *Steatites.* K.

Talc steatite. H.

Speckstein. W.

Handsome specimens of this mineral, of a cream colour, have been discovered in Delaware county, Pennsylvania, near the Brandywine, whose surface is elegantly spotted with black dendritic delineations.

A considerable vein of it was observed in serpentine rock, sixteen miles west of Philadelphia, and half a mile south of the Lancaster turnpike road. Its colour has a greenish tinge; the surface is also dendritic. I think we shall not be far wrong if we consider both the above varieties as transitions to *semi-opal*.

33. *Serpentine.* K.

Roche serpentineuse. H.

Gemeiner serpentın. W.

This mineral occurs abundantly in an amorphous independent state, in Chester, Montgomery, and Delaware counties, Pennsylvania. It is frequently veined, and in many instances is variously coloured.

It has been discovered near Newport, Rhode Island, and the perpetual green of the hills of the state of Vermont is owing to their being formed of this rock, which, in Pennsylvania, is well known by the name of *barren stone*.

Serpentine rock is common at Hoboken, New Jersey.

All the above serpentines attract the magnetic needle, though in a feeble manner, except that from the neighbourhood of Newport, which is the only specimen that exhibited, in a very evident manner, two *distinct poles*.

It seems probable to me that this rock commences in Rhode Island ; that it assumes a south-western course, and traverses Connecticut, New York, New Jersey, Pennsylvania ; and thence passes to an unascertained distance ; and that it is one continued chain : it closely follows the direction of our principal mountains.

I was much surprised, after having ascertained the *two distinct magnetic poles* of the specimen from *Rhode Island*, to find that the one which was found on Enoch Gormin's farm, in Chester county, Pennsylvania, exhibited but a feeble action on the needle, and *no distinction* of poles whatever, though *considerable veins* of a *highly magnetic iron ore* are found in it, at the same time that the *ore* itself has its *poles very distinct*. In no instance did I observe any particles of iron intermixed with the rock.

34. *Asbestus*. K.

Asbeste. H.

Asbest. W.

Asbestus has been discovered in Chester, Delaware, and Montgomery counties, Pennsylvania; at Hoboken, New Jersey; near Albany, New York; and near Milford, Connecticut.

35. *Amianthus*. K.

Asbeste flexible. H.

Amianth. W.

Veins of amianthus traverse the serpentine rock of Chester county; it is found particularly fine near Hoboken, New Jersey, and near Milford, Connecticut.

36. *Amianthinite*. K.

Actinote. H.

Asbestartiger strahlstein. W.

I have a specimen from Anderson's ferry, twelve miles above Columbia, on the river Susquehannah.

37. *Glassy actynolite*. K.

Epidote. H.

Glasartiger strahlstein. W.

Large masses, consisting of minute fibrous crystals, are found in Delaware county, near Chester creek. It has been discovered in York county, Pennsylvania, and near Hudson, New York.

38. *Siliceous spar?* of Kirwan .*Grammatite.* H.*Tremolith.* W.

Tremolite has been found near West Chester, sixteen miles from the city of New York, and near to the town of Young, on the river St. Lawrence.

Common and glassy tremolite, which equal that from St. Gothard, are found in carbonate of lime, near Newhaven, Connecticut; in this last locality it also occurs upon *whinstone*.

39. *Sappare.* K.*Disthène.* H.*Cyanit.* W.

Flattened prisms of this mineral were found on micaceous schistus, near Chesnut Hill, Philadelphia county, and in the same manner near Newhaven, Connecticut.

40. *Staurotide.* H.*Granatit.* W.

This mineral is not described by Mr. Kirwan. It occurs in *slaty chlorite*, Montgomery county, Pennsylvania, and in *micaceous schistus* near Bolton, Massachusetts.

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FOREIGN AND DOMESTIC.

New Theory of the Tides. Suggested by ROSS CUTHBERT,
Esq. of Lower Canada.

PREFACE.

WHATEVER in science has been sanctioned by sir Isaac Newton should perhaps be privileged from inspection, and taken for true. But it often happens that human genius, weary as well as proud of success, will seek repose in arbitrary explanations of the phenomena it has found difficult to solve. The cause of the tides, seems in this way to have been ascribed chiefly to the moon's attraction, evidently in consequence of an occasional, but very irregular, correspondence between its changes and the variations of the tides. However, the moon and tides have not the pretended coincidence of change; the experience of every month proves their disagreement; that high water sometimes takes place, even three hours after the time when the moon's supposed disturbing force is greatest;

and low water within three hours of the same period, and even at the same time. The supposition that the gravity and viscosity of water prevents its promptly obeying the moon's force, would be well founded if the moon's changes were sudden. But the moon's progress is slow; and, consequently, had the moon the disturbing force attributed to her, the changes in the waters which partly cover the globe would necessarily be regular: high water would take place precisely when the moon's force was greatest, and would steadily follow the moon in her progress.

The theory admits and requires, that the attraction of the moon, detached and distant as it is from the earth, is sufficient to controul, and therefore greater than, the various opposing forces of, 1st, gravity, whereby the particles of water are drawn and bound to the common centre of the globe of which they form a part; 2dly, the attraction of cohesion, acting mutually on the particles in contact with each other.

It is further assumed, that the waters of the globe are raised in the region immediately beneath the moon and at the antipodes of that region, at the same time; so that the moon attracts one side of the globe, and repels the other.

The sun and moon, in conjunction or opposition, are required to produce the same effect. Thus the sun and moon, acting together on the same radius, on the principle of attraction are supposed to disturb the waters of our globe, in the same way as when the sun is acting in exact opposition to the moon.

The moon's attraction must be a tendency to approach the whole mass of our globe, but not to derange or disunite its parts.

Could the moon's attraction disturb the waters of our globe, one wave or tide only, would perpetually follow the moon; and, instead of two high and two low tides, at each place, in twenty-four hours, there would be but one tide during that time.

Indeed the difficulties met with, in the application of the common theory to the reality, drew from the editors of the *Encyclopædia Britannica* the following remarks :

“ The reader will undoubtedly be making some comparison in his own mind, of the deductions from this theory with the actual state of things. He will find some considerable resemblances ; but he will also find such great differences, as will make him very doubtful of its justness. In very few places does the high water happen within three quarters of an hour of the moon's southing, as the theory leads him to expect ; and in no place whatever does the spring tide fall on the day of new and full moon, nor neap tide on the day of her quadrature. These always happen two or three days later. By comparing the difference of high water and the moon's southing in different places (and they might have added at the same place at different times) he will hardly find any connecting principle.”

But such are the irregularities observable in the tides, that no assignable cause whatever can appear in perfect unison with them ; and science will probably have to chuse its solution of their phenomena among plausible probabilities. The theory here suggested is grounded on a principle daily experienced ; and, it is humbly presumed, more satisfactorily applied than that on which the common theory is founded.

NEW THEORY, &c.

HEAT, or, as called by chemists, caloric, whether a substance or quality, expands whatever it pervades; and this effect is the same, whether caused by the sun's presence, by friction, or otherwise*.

Besides a variety of particular experiments, daily experience demonstrates the expanding force of heat. In proportion to the degree of heat present, the mercury in the thermometer swells and rises in the tube, and shrinks and retires in proportion to the diminution of heat. Water in a kettle, placed over a fire, is seen to boil up to double the original volume, and, on being removed, to return to its first dimensions.

As fluids are composed of particles without continuity, and whose adhesion is feeble, they are more sensibly affected by the presence of heat than solid substances. The same degree of heat that would produce a scarcely perceptible expansion of a bar of iron, would cause a quantity of water, which but half filled a kettle, to boil over, and would raise the mercury of a

* Although few things are more generally known, than that heat expands whatever it pervades, the following account of this effect is cited in explanation:

“ The principal effect of heat is to augment the volume of all bodies, without adding to their weight. In general, every body in nature is dilated by heat, and all mineral substances, without exception, experience a dilation which is greater the more intense the heat. Philosophers have made an experiment with a cylinder of metal fitted to an orifice in a metallic plate, so as just to pass through it when cold, and they find that the same cylinder, when heated, could not pass. It is therefore established that bodies expand by heat, and that their dimensions are enlarged in all directions.” *Elements of Chemistry*, by M. de Fourcroy, article Heat.

thermometer several hundred degrees, if sufficiently long to admit of such a range; also, that degree of heat which will raise mercury 10° will raise spirits of wine 12° or 13° . The latter fluid recedes farther from a state of solidity than the former.

The sun emits a perpetual flood of heat in all directions, and mingles with and swells the waters which cover the globe.

EVAPORATION.

It cannot fail to be objected, that, notwithstanding the sun's heat generally dilates all matters within its reach, yet, in regard to fluids, the presence of heat tends chiefly to raise portions of them into vapour. The objection is well founded in regard to small quantities of fluid: for instance, a bason of water. In this case, the rays of the sun are reverberated from the sides of the bason, and the diffusive motion of the heat being only upwards, the particles of the water are soon dispersed.

Not so with the vast oceans that cover the globe. The sun's rays penetrate to, and spread unconfined throughout, their deepest regions, and the diffusive motion is perpetually downwards, but, as it proceeds, becomes more and more feeble, and too faint to admit of reverberation from the bottom.

Evaporation is slower, in proportion to the greater bulk of a fluid, the forms being similar. To prove this, two tin vessels, whose forms were similar, and capacities to each other as five to one, were placed on the top of a stove equably heated. During the time the water evaporated from the vessel which was as five, the vessel which was as one was filled up six times,

and was six times emptied by evaporation. One sixth part more water than the larger vessel contained was dispersed from the smaller vessel, in the same time, and by exactly the same agent.

Evaporation is slower, also, in proportion as the volume of fluid is more collected. The water shed by a cloud, when scattered over a plain, is dissipated in a period of time incalculably shorter than an equal quantity would be if collected in a pond. In the latter condition, the heat has liberty to range; in the former, the heat, arrested by the earth, and reflected therefrom, suddenly carries off the particles of water. Indeed, if each drop of the water which composes an ocean could be carried off by the sun with as much speed as a single drop cast on a solid body, it probably would require but a few days to empty the Atlantic Ocean, were the atmosphere capable of receiving it, and the land sections of the globe would have to sustain an uninterrupted deluge from above.

Two tin vessels of cylindrical form, whose diameters were equal, but whose heights, and therefore capacities, were to each other as ten to one, the height of the former being equal to its diameter, were placed on a stove equably heated. During the time the water evaporated from the vessel which was as ten, the vessel one, was emptied eighteen times; so that, in the same time, about half the quantity of water only was carried off from the deeper vessel, that was carried off from the other.

Two tin vessels of equal capacities, but whose depths were to each other as two to one, were placed as above. The vessel which was but half the depth of the other, but which never-

theless contained an equal quantity of water, was emptied in a decidedly less time.

Since, then, by these simple experiments it appears, the degree of heat being the same, evaporation diminishes with the increase of the volume of a liquid, and the more collected its form; it is concluded that, in such enormously extensive bodies of water as the oceans are, evaporation must almost cease.

This conclusion is farther supported by facts. It may be generally stated, the more remote from land, the more serene the sky. Mariners going to sea, look for good weather; approaching land, they expect foul. The Pacific Ocean, the longest uninterrupted body of water, is unobscured by a cloud for months together, and from this circumstance derives its name. The atmosphere is generally clear over the Atlantic Ocean, even during seasons when the neighbouring countries are enveloped with fogs or clouds. The sun's heat, confined and checked by the solid surfaces which land presents, is spent in dissipating and diffusing the small bodies of water, which, in the form of swamps, lakes, and rivers, may be lodged or running on the face of a country; and the more frequent such bodies of water occur, the more is the ambient sky loaded with vapour.

But, notwithstanding it be admitted evaporation constantly takes place from the waters which cover the globe, a small part only of the sun's heat is engaged therein, because,

1st. The progress of the sun's heat is so rapid and constant, that the employment of it by evaporation is too slow to prevent the farther action of the sun throughout the whole extent of the water. Thus the heat of a fire acts so powerfully on water

placed in a kettle, as to swell the water considerably at the same moment that it is losing much by evaporation. * This experiment is made every day in every kitchen, and is a correct though violent representation of the periodical swells of the oceans caused by the action of the sun.

2d. Because the capacity of the atmosphere is limited, and can receive but a limited quantity of vapour, and because the sun's heat is infinite when compared to the capacity of the atmosphere. The infinite remainder of the sun's heat unengaged in evaporation, necessarily pervades and mingles with the waters of the oceans, and thereby augments their volume.

The atmosphere has a limited capacity. It can admit, in the form of vapour, only a certain finite quantity of water. When charged to its utmost capacity, evaporation must cease. It is probable the atmosphere is at all times nearly charged to its utmost capacity, because the extent of water, which is the material, and the sun the agent, are constantly the same, and constantly employed in maintaining that utmost charge. The continual changes in the atmosphere only, prove that an infinitely various distribution of nearly an equal quantity of vapour is taking place, every where and at all times. Some regions of the atmosphere are receiving water, while from other regions it is returning. This is not made less probable by the long continuance of clear weather, since the atmosphere often acquires a condition which refuses evaporation. The long duration of clear, dry weather, at times, when the same causes of evaporation are in force that loaded the atmosphere with vapour, furnishes a sufficient proof. For two, three, or more weeks, the sky often continues calm and clear, and free from dew, beneath a vertical sun. It follows, that at those periods the atmosphere refuses the vapour constantly offered by the

action of the sun; or, what seems more probable from the above-recited experiments, the sun, in regard to very large bodies of water, is little employed in evaporation, but chiefly in dilating their volume.

The gentle evaporation that may take place from the oceans does not affect their height. They being co-extensive with the atmosphere, whatever quantities of water the atmosphere may acquire in the form of vapour, by the action of the sun, in some places, are in other places returned into the oceans, directly in the form of rain, or indirectly by the channels of rivers and rivulets. And this routine of evaporation and rain, it is certain, keeps up a steady balance of accounts, since the high and low water marks, through successive centuries, remain the same in all places: so that, from the natural tendency of liquids to gain a state of equilibrium, and the various oceans communicating one with the other, it follows, the waters which cover the globe would remain in a state of undeviating height, were they not otherwise influenced by the expanding power of heat.

It is not to be supposed, the action of the sun on the waters in high latitudes produces the changes there, *e. g.* the English Channel. The sun's heat may be said to act as a percussive force, and to give a periodical stroke to the great bosom of the ocean over which the sun passes vertically. The changes of the water along the shores are the effects of the impulsion given to the central regions of the oceans; and the farther the shore, to a certain extent, the greater the change. Impulsion is adopted instead of swell, to render the idea more distinct. Each swell moves off in a wave; and, the greater range it takes, the higher the undulation. This will appear by dipping the hand in an oblong tub, full of water, nearer to one end than the other:

the rise of the water will be considerably greater at the end most distant from the stroke. And this may account for the greater height of the tides in middle latitudes than near the line. The undulation is exhausted in its progress towards the poles.

EXPLANATION OF THE PHENOMENA OF THE TIDES.

The sun's heat pervades one half of the surface of the globe at all times; and by the periodical visitation of the various oceans by the sun, in consequence of the diurnal rotation of the globe, periodical swellings are produced in those oceans, which exhibit all the phenomena of the tides.

The waters contained in any given tract of the globe, for instance, the Atlantic Ocean, are exposed to, and receive the sun's heat once in twenty-four hours, in consequence of the diurnal motion of the earth. Let the sun be on the line: the nights and days will be equal, and the sun will rise at six o'clock. The moment the sun rises, its heat begins to sink into the ocean; as the sun ascends, the heat becomes greater, its intrusive, pervading, and expansive force greater, until it reaches the zenith, and the gradual augmentation of the water by the immersion of heat during this time, will exhibit a flood tide along the edges of the shores in contact with the ocean. It will be noon, and six hours will have elapsed. As the sun gradually declines westward, there will be also a gradual secession and escape of the heat from the ocean. The ocean, thus insensibly abandoned by the heat, will consequently shrink, and exhibit along the shores an ebb tide. At six o'clock in the evening, the sun having set, and the heat altogether vanished, low water will take place. During this first solar day of twelve hours, there will be one flood tide and

high water, and one ebb tide and low water: one rise and one fall of the water.

This rise and fall, having disturbed the edges of the ocean, or where the ocean is in contact with land, a re-action will ensue; but, in consequence of the gravity and viscosity of water, it will be performed in rather a longer time than the first swell, which is the cause.

The first re-action would be followed by others; and were the sun, the original agent, to disappear altogether, nevertheless a vibratory tide might endure for ages. This will appear extremely probable, by the effect produced by dipping a hand in a bason of water. The first rise and fall will be followed by a similar rise and fall, and a vibration will ensue for some time along the edge of the vessel. A stone thrown into a pond of water, will occasion the shore to be lashed for a considerable time by successive equal re-actions of the water, although the water received originally but a single impulse from the stone. The longest calms are scarce sufficient for the ocean to subside to a state of rest. When it most approaches to, or for a while really acquires, a state of quiescence, a ceaseless rise and retrocession of its waters continue along the shores which confine it, commonly called surf.

In consequence of the re-action which follows the original rise and fall of the waters of the first day, occasioned by the sun, the first night will exhibit a repetition of the tides of the first day. From six o'clock in the evening, being sun-set, the waters will rise till midnight. At midnight (or a little after, in consequence, as above stated, of the gravity and viscosity of water) there will be high water. From midnight until some time past six o'clock in the morning, ebb tide will take

place ; and at past six o'clock in the morning there will again be low water.

Thus, in a little more than twenty-four hours, there will be two flood tides and two ebb tides, twice high and twice low water ; and this corresponds with the reality.

But it appears the tides gradually increase for seven or eight days, at the end of which time the highest flood tide, called spring tide, takes place ; and, for the seven or eight days following, the tides decrease, and terminate in what is called a neap tide, that is, the lowest tide.

When the sun rises the second day, it overtakes the re-acting tide, which is then beginning to perform a new flood tide. The sun, acting in conjunction with this tide, increases its extent and duration ; so that, instead of being at noon, as on the first day, it is near one o'clock when high water takes place. In consequence of the increase of the second day's flood tide, the re-action will be greater ; that is, on the ensuing night the tide will be greater. On the third day, the sun acting in conjunction with the re-acting flood tide, increased by the additional impulse of the second day ; the flood tide on the third day will be greater than on the second, and high water will take place still later. The flood tide of the ensuing night, being a re-action of the third day's flood tide, will also be greater, and take place later than the flood tide of the second night ; and this increase will continue until the highest or spring tide takes place.

The successive increase of the extent and duration of the tides, will evidently change the periods of their vicissitudes or changes ; so that, although the sun acted in conjunction with

the re-acting tides on the second, third, and fourth days, on the seventh or eighth, in consequence of the prolongation of the tides, it will come to act in opposition to them, until they are worn down to the lowest measure, or neap tide. As has been stated, after the first day, the sun acts jointly with the re-acting tides occasioned by the first disturbance of the ocean. By thus acting together, the extent and duration of the tides are increased: each successive day, they will turn later and later, until the seventh or eighth morning, when, at sun-rise, the time of change will have so much altered, that the ebb tide, which, on the second morning, terminated shortly after sun-rise, will, on those mornings, be so far delayed, that the sun will resist it. Suppose the ebb tide, at sun-rise on the seventh or eighth morning, to be but half spent, the gradual immersion of heat will check and shorten, though it cannot destroy it.

Something similar to this daily takes place on the surface of the ocean. Any supposed wind, blowing strongly over the water, gradually raises a greater and greater swell of the sea. At first a gentle curl will appear; small waves will follow, which will finally grow into long and extensive swells or mountains of water. Let the wind veer round, and blow from the opposite point: the original swell will continue to roll, although with decreasing dimensions, and several days will elapse before the original swell will be altogether subdued by the adverse wind.

REMARKS.

Deviations from these general movements of the tides are occasioned by local circumstances.

The change of seasons cannot alter the supposed action of the sun on the oceans, as its heat constantly strikes a hemisphere of the globe. Whether the sun is considered to be on one side of the line or the other, it is immaterial; since the oceans, extending on each side of the line to the poles, must continue to receive the sun's heat. Could it be possible that the half of the globe, on which the sun shone at any given time, was masked by clouds, the sun's heat would nevertheless reach the waters thus hidden. Heat is so diffusive, that the most dense bodies check it only for awhile: it therefore cannot be supposed that vapour can materially check its progress. The mercury of a thermometer will rise in the shade. However, interventions of this kind may cause some of the caprices of the tides.

It may be objected, that, during the night, the atmosphere often continues warm, and that this heat must prevent any distinct effect from the sun's presence. But the warmth experienced after sun-set, is evidently the heat escaping from the surface of the globe, accumulated during the day; since the warmth equally diminishes, and towards morning the atmosphere becomes cool. The diminution is more rapid over water than land, because of the less resistance given to the escape of the heat, in consequence of the less continuity of the particles of fluids than of solid bodies.

Analysis of Dr. Willan's "Description and Treatment of Cutaneous Diseases. Ord. 3. Rashes. Part 1st," &c.

The description of rubeola or measles, though perhaps more minute from the necessity the author felt of peculiar accuracy,

cannot be materially different from our best writers on the subject. However, there are a few facts which are better established than heretofore. The first of these is the period after receiving the infection, when the symptoms commence; and, secondly, the period after such commencement, before the eruption shows itself. These, with the varieties to which they are liable, are accurately traced. The period after exposure to the contagion, before the fever commences, or, to use Mr. Hunter's words, the period of the disposition to the disease before its visible action commences, is usually from the sixth to the tenth day. The period of eruption after fever is from the third to the sixth day. Those who are less susceptible may continue for a long time communicating with the sick; but the contagion does not act upon them unless the body be brought into a feverish state by some accidental cause, as, by taking cold, by watching, fatigue, or mental suffering. "I do not recollect," adds the author, "any person wholly unsusceptible of the disease after repeated exposure, as happens in small-pox in a very considerable proportion." But if all are susceptible of the disease, it follows that all must feel ultimately the effect of the contagion if exposed to it, even though the body should not be brought into a feverish state by any other cause. May we not therefore be allowed to doubt whether the deranged actions in the constitution from these other causes, may not have produced this protraction of the disease? That such a cause will protract the appearance of the rash, the author shows by a case, the periods of which he had an opportunity of marking with particular accuracy. He afterwards reduces it to a general law: that, "when a person who carries about him the contagion of the measles, gets a catarrh, or becomes feverish from the causes mentioned above, the contagion begins to operate about the fourth day of such a fever, and then excites fresh paroxysms, which after four days

terminate in the eruption. Hence the febrile stage in this instance appears to have the extent of eight days."

Now it is well known that the common period of the acute state of catarrh is about four days. From that time, if the patient is not well, he is at least convalescent, and complains more of the effect of his *cold* than of the disease itself. Is it not therefore probable that the action of measles has been suspended by this new action, that is, the catarrh, after the impression has been received from the contagion; and that when this action from the supervening catarrh, has been completed, that of measles commences, and goes through its usual progress? We are led to offer these suggestions to our ingenious author from the following very valuable history.

"I inoculated about the same time three children with the fluid contained in these vesicles, but no effect was produced by the inoculation. A similar trial at the Inoculation Hospital proved more successful. Richard Brookes, aged eighteen, was inoculated by Mr. Wachsell, with fluid from the miliary vesicles in measles, and with vaccine virus, January 6, 1800. On the 10th there was some redness and elevation of the cuticle at both the inoculated places. 15th. The redness round the part where the lymph of the measles was inserted had disappeared, while the vaccine pock was vivid. 18th. The vaccine disease was over. 22. He had severe cough, sneezing, and watery eyes, with cold shiverings and fainting. 28th. The measles appeared; his eyes were inflamed, and the lids swollen. 29. The efflorescence was diffused all over the surface of the body; frequent cough; violent fever. Feb. 1. Efflorescence disappeared; cough and fever much abated. From that time he recovered gradually, and was dismissed in health on the 12th of February."

We have copied this passage not only as an instance of successful inoculation for measles, but also as an illustration of our opinion concerning the causes of the protraction of the disease after the contagion has been received. Here we find the subject susceptible of the two contagions at the same time; and, as long as the diseased actions were local, both went on at the same time. But as soon as the constitutional action from vaccination commenced, the local action of measles ceased. When the vaccine process was completed, the rubeolous recommenced, and in four days afterwards the cough, sneezing, and other symptoms previous to the eruption came on. In six days more the eruption appeared, and in four more disappeared; making in the whole twenty-six days, a fair allowance for the two diseases. We would not be supposed in this examination to question Dr. Willan's accuracy or his abilities; we have fairly stated the question as it appears to us, and leave the decision to our readers.

After a very accurate description of the disease in its most usual progress, the author enumerates some of the anomalous appearances remarked by himself and other writers. We shall transcribe his own, not only on account of their importance, but because they lead to the solution of a difficulty which no one has ventured to touch upon with so much boldness before.

“ Some other appearances which occasionally succeed the measles likewise demand attention. These are, 1st. Small hard tumours, like boils, being in the beginning very much inflamed, and sometimes of a livid colour, afterwards suppurating with great pain, and a sanious discharge. They appear mostly on the back, loins, or lower extremities, and are not readily healed. In children there is an analogous eruption of

inflamed pustules (Phlyzacia, DEF. X. 1.) on different parts of the body, but particularly on the feet, legs, thighs, and scrotum.

“ 2dly. An eruption round the chest, about the mouth, temples, &c. of watery vesicles, in clusters, with an inflamed base, producing much heat, pain, and tingling of the skin.

“ 3dly. In infants aphthous ulcerations of the tongue and fauces.

“ 4thly. Soft pustules containing a viscid, straw-coloured fluid (Achores & Favi, DEF. X. 3.), on the head, face, breast, and thighs, succeeded by ulcerations at the corner of the mouth, with tumour of the upper lip, sore eyes and ulcerations of the tarsi, discharges from behind the ears, enlargement and tedious suppuration of the submaxillary, occipital, axillary, and inguinal glands, sometimes with pain and swelling of the joints.

“ 5thly. In some cases where no eruption of pustules, nor superficial ulcerations have preceded, the lymphatic glands of the neck and other parts become considerably enlarged; this appearance is succeeded by a swelling and tension of the abdomen, with hectic fever and emaciation.

“ I never saw the rubeola terminate by gangrenous ulcers of the throat, cheeks, gums, &c. or by caries of the jaw-bones, as stated in several respectable authors. Those dreadful symptoms more especially belong to another disease of the present order.”

We shall pursue this important enquiry without interruption.

“It may be proper,” says our author afterwards, “to notice the ‘putrid measles,’ observed by the late sir William Watson among the children at the Foundling Hospital, in 1763 and 1768; see *Med. Observ.* vol. 4. In this disease there was a cough and watery inflamed eyes, but ‘the eruption appeared, over nearly the whole body, on the second day;’ the fauces were of a deep red colour; the pulse was very quick, but low; the patients complained of extreme weakness, and could not bear bleeding; their oppressed and difficult breathing was attended with great restlessness and anxiety, but with scarce any expectoration throughout; some died under laborious respiration, more from a dysenteric purging; several were so debilitated that they refused to take almost any nourishment, and sunk quite emaciated, one so late as six weeks after the attack; some cases terminated in mortification of the rectum, pudenda, cheeks, gums, &c. others with caries of the jaw-bones.’ These circumstances do not belong to the rubella, or measles generically considered; they are, indeed, ranked otherwise in sir W. Watson’s own statement respecting the disease, which he refers to the *morbilli maligni*, or *epidemii*, described by Morton. Now, it must be observed, Dr. Morton expressly maintains that the measles and scarlatina are the same disease, with no more variation in their form than there is between the distinct and confluent small-pox; he has therefore conjoined their principal symptoms (*cap. iii.*) and wishes to banish the distinction, and the very name of scarlatina from medical language. In this wish Dr. Morton has not succeeded; hence those readers who attend, not to the names of things, but to the things themselves as described, will find that the *morbilli maligni*, *morbilli epidemii*, *morbilli spurii*,

and febris morbillosa, pestilentialis, in his writings, have no relation to the measles, but constitute the disease to which other writers have given the titles of angina maligna, ang. epidemica, ang. pestilentialis, ang. ignea, scarlatina anginosa, scarlatina maligna, &c. &c.

“ Sir William Watson probably first adopted Dr. Morton’s opinion, and nomenclature, about the year 1768; see Med. Obs. IV. p. 133. In 1763, his technical terms seem to have been different; he says, Med. Observ. p. 136, ‘ the first person seized with the epidemic measles was on April 21,’ but in the weekly report of the sick to the Hospital Committee, and in the apothecary’s book, this case is denominated ‘ eruptive fever.’ The two other cases, said, Med. Obs. p. 137, to have occurred between April 21 and May 4, are not entered in the written books under the denomination of ‘ measles;’ one is termed ‘ eruptive fever,’ the other ‘ scarlet fever.’ From these sources one hundred and eighty children were soon affected with the disease in question, every case of which is termed ‘ eruptive fever,’ no mention being made of measles in the report-book till the latter end of November, when ten cases are entered under the name of ‘ morbillous fever.’ This, however, had no connexion with the preceding ‘ eruptive fevers,’ which, according to the printed account (p. 137), wholly ceased on June 9*. In 1766 many of the foundling children,

“ * Sir W. Watson’s statement has led several persons to suspect, that, from the virulent symptoms of a disease alway imputed inflammatory, there must be something amiss in the state of the air, the diet, or general management of the children of the Foundling Hospital. For this suspicion there is no ground. The regulations remain nearly the same as first framed by the governors, yet their active and intelligent physician, Dr. Stanger, informs me that the measles, during the last twelve years, have never appeared in any other form than as described by Sydenham; and, though frequently occurring there, that they have not been fatal beyond the usual proportion. Thus, in

particularly those placed at Westerham Hospital, in Kent, are said to have been affected with 'eruptive fevers and sore throats,' a title not afterwards employed. The measles appeared among the children of the Foundling Hospital at the beginning of March, 1770, and continued some time. In May, the scarlatina and measles seem to have occurred together, and to be distinguished, according to Dr. Morton's nomenclature, as follows: 'measles,' 'measles and sore throat' or 'measles and ulcerated sore throat,' and measles with 'putrid fever.' The denomination 'scarlet fever and sore throat,' first occurs in the weekly report, Sept. 1, 1787. About the same time, in the prescription book appropriated to the measles, a separate entry is made of scarlatina, this generic title being at length applied, when the disease, after a dreadful ravage during two successive years, had fully impressed the inhabitants of London with a knowledge of its distinctive character, and peculiar virulence."

We shall make no apology for this long quotation on an enquiry leading to so important a discrimination. Dr. Willan's arguments seem almost conclusive, and it is impossible not to admire his industry in following the question so closely. But we cannot help also expressing our surprize when he tells us, that measles have not been fatal at the Foundling beyond the

the year 1798, twenty-five boys, and forty-four girls had the measles; six of the latter died. In autumn, 1800, twenty-nine boys, thirty-seven girls were affected, and four boys died of the disease, or its consequences. In 1794, twenty-eight had the measles, and all recovered. In 1802, one died out of eight children affected. Particular cases may occur wherein symptoms of putrescence appear during the latter stages; (p. 237). Of such cases I have only noticed five, in a practice of twenty-four years: many practitioners, who have been established fifty years, have not seen them in a greater proportion; I never yet conversed with any one who had noted putrid measles occurring epidemically."

usual proportion ; when by the register, it appears that at two periods taken collectively, about one in thirteen died. Surely, such a mortality as this is beyond the common ratio in this disease. The question is carried much further than our limits will permit us to pursue it, but not further than every diligent enquirer will wish to accompany our author. This part of the work concludes with some short but pointed remarks on the low state of Saracenic or Arabian medicine, even when in its highest reputation.

Med. and Phys. Jour. v. 14. p. 362.

On Inoculation of the Measles.

We transcribe the following remarks on inoculation for the measles, as a subject hitherto not mentioned in our work. “ The great success which attended inoculation for the small-pox,” Dr. Wilson observes, “ induced many to believe that similar advantage might be expected from it in the measles. The very prevalent opinion of its being received in the natural way by the lungs, and the lungs being the chief seat of danger in this disease, seemed rather to strengthen the opinion. Dr. Home, of Edinburgh, however, was the first who actually made the experiment.

“ He met with some difficulty from the measles not forming matter, and his not being able to collect a sufficient quantity of broken cuticle, at the time of desquamation, to produce the disease. ‘ I then applied,’ he observes, ‘ directly to the magazine of all epidemic diseases, the blood.’ He chose the blood when the eruption began to decline in patients who had a considerable degree of fever. He also ordered it to be taken

from the most superficial cutaneous veins where the eruption was thickest.

“ While the blood came slowly from a slight incision, it was received upon cotton, and on an incision being made on each arm of the person to be inoculated, the cotton, as soon as possible after it had received the blood, was applied over these incisions, and kept upon them, with a considerable degree of pressure. He also used the precaution of allowing the incisions of those to be inoculated, to bleed for some time before the cotton was applied, that the fresh blood might not wash away, or too much dilute the morbillous matter. The cotton was permitted to remain on the part for three days. How far all these precautions are necessary to the success of the operation has not been determined.

“ Dr. Home inoculated ten or twelve patients in this way, in whom the operation succeeded equal to his hopes. The eruptive fever generally commenced six days after inoculation, and the symptoms of the complaint were milder than they generally are in the casual measles. The fever was less severe, the cough either milder or wholly absent, the inflammation of the eyes was trifling; they watered, however, as much, and the sneezing was as frequent, as in the casual measles; nor did bad consequences follow any case of inoculated measles: no affection of the breast remaining after it. The chief difference between the casual and inoculated measles seemed to be, the absence of any pulmonic affection at all periods of the latter.

“ Dr. Home now regarded it as ascertained, that the natural measles are received by the lungs, and that on this circumstance depends the danger of the disease. He wished, however, to ascertain the symptoms of the complaint when evidently re-

ceived by the lungs. He therefore put a piece of cotton, which had remained in the nose of a patient under measles, into that of a healthy child, making him breathe through the infected cotton. The experiment, although repeated, did not succeed in inducing the disease. Nor, it is evident, if successful, would this experiment have decided the question whether or not the casual measles are received by the lungs. Dr. Home's experiments have not met with the attention they deserve. In scrophulous habits, particularly, it would certainly be worth while to try his mode of inoculation. If a more extensive experience prove it capable of producing the effects ascribed to it, it will certainly be an improvement of considerable importance."

Med. and Chir. Rev. vol. 7. p. 375.*

History of Diseases, &c. from Ancient Authors.

NO. I.

The Editor presumes no apology is necessary for commencing the introduction of a series of papers on diseases, as given by our ancient medical authors:—It is believed that it will prove acceptable to many (who have never had an opportunity of perusing their works, either translated or original), to compare the accounts they give of the disorders which came under their notice, and their method of treatment, with the observations of the physicians of the present day.

We shall commence these papers from Aretæus, from the translation by Dr. John Moffat, from the original Greek, of his

* From Wilson's "Treatise on Febrile Diseases."

“ eight books, on the causes, symptoms, and cure of acute and chronic diseases.”

Aretæus was a Cappadocian, though the period of his life is uncertain ; he lived, however, before Paulus Ægineta, who flourished in the seventh century, for he quotes him, and his writings are thus eulogised by Mittaire, in a letter to Dr. Friend : “ His accuracy is so great that you would imagine he painted and did not write, you would think you did not feed the eyes with an empty picture, but that you were present with the persons afflicted, beheld their various labours, heard their cries, groans, and sighs, that you felt yourself affected with horror, and moved with pity, in proportion to the distresses with which they were affected.” Motherby says, “ in picturesque accuracy, he surpasses all others among the ancients, except Celsus, who is called the Latin Hippocrates ;” and our translator (Dr. Moffat) considers him as “ the head of all the ancients, Hippocrates not excepted, both in respect of matter and elegance of diction.”

THE TETANUS*.

Tetanus is a spasmodic affection of the muscles belonging to the maxillæ and the tendons, accompanied with severe pain, frequently with sudden death, nor does it easily admit of a remedy. The distemper is communicated to the whole frame, and every part partakes of the original affection.

There are three different species of this convulsion : the first is, when the body is extended ; the second, when it is bended backward ; and the third, when it is curved forward.

* Chap. I, book I.

The first takes place when the patient is stretched out in one direct line, and cannot be made to incline either to the one side or the other. The other two are easily known and distinguished from the mode of tension and situation of the person affected: hence we call the reflection backwards *opisthotonos*, the nerves on the back parts being chiefly affected; but if the patient is bended forwards, it obtains the name of *emprosthotonos*, from the affection of the nerves on the anterior parts: the name thereof originates from the tone of the nerves and the mode of tension.

They arise from an infinite variety of causes; from wounds, a puncture of the membranes, muscles, or nerves, and in such cases they generally prove mortal, especially that which arises from a wound.

When this affection arises in women from abortion, they seldom survive; some are seized with this convulsion from a violent stroke in the neck, and not unfrequently a severe cold serves as a cause: on this account winter especially produces affections of this nature, and next to it the spring, with the autumn, but the summer least of all, unless a wound or the raging of some epidemic distemper has laid a foundation. It is observed that women are more liable to this disease than men, from the frigidity of their system, but they more frequently survive, from their inherent moisture.

With regard to the different periods of life, children are much harassed with it, but they are not so subject to die, because the disease is, as it were, domestic and familiar to their constitution. Youth suffers less, but among them death is more common, manhood least of all, but old age is of all other periods the most liable to the affection, and death is more fre-

quently the consequence ; for frigidity and the want of moisture, inseparable from old age, likewise the peculiar nature of death, operate as causes. If humidity is conjoined with frigidity, these spasmodic contractions are less hurtful, and attended with much less danger.

The concomitant symptoms of this affection are the following : its attack is sudden and instantaneous upon all, there is a pain and tension of the tendons, both of the back and muscles of the maxillæ and thorax. The under jaw is so closely locked to the upper, that it is not easy to separate them, either by levers or wedges ; and if any one, by forcing the teeth asunder, should instil a liquid of any kind, they do not swallow but throw it back, either holding it in the mouth, or rejecting it by the nostrils. The isthmus likewise adheres closely, being shut, and the tonsils, obdured and tense, will not yield to the compression of what is to be taken down. The face is red, variegated, the eyes nearly fixed and stiff, can only with difficulty be made to roll, suffocation is violent, respiration vitiated, with a distension of the hands and legs, the muscles vibrating, the whole face variously distorted, the cheeks and lips quivering, the maxillæ vibrating, and the teeth gnashing ; in some the ears are likewise perceived to move ; and I have indeed with astonishment beheld the urine suppressed to a violent degree of strangury, or spontaneously flowing upon the pressure of the bladder.

These symptoms are common to all the genera of spasmodic convulsions, but each has its distinguishing and peculiar marks.

Tetanus, which is a distension of the body in a straight line, holds it in one fixed invariable posture, flexible neither to the

right or left ; the legs and hands are likewise kept in the same position.

But *opisthotonos* bends the patient backward, so that his head reflected is placed between the scapulæ, his throat stands out, and the inferior jaw for the most part is separated and but seldom unites with the upper, his breathing is deep, attended with startings, his belly and thorax prominent, with incontinence of urine, the abdomen tense, and when beat upon resounds, the hands when extended are twisted backward, on the contrary the legs and hams are vitiously curved in an opposite direction.

If *emprosthotonos* takes place, the back of the patient is convex, and the haunch bones being thrust from their sockets, are opposed equally to that part of the breast, which the Greeks call *mataphrenon*, the spine draws to a straight direction, the vertex and head fall downward inclining to the thorax, the chin is fixed upon the sternum, the hands are clasped, and the legs extended.

The pains of all are violent, and their suffering intolerable ; the voice is sad and mournful, accompanied with sighs and deep muttering ; but if the disease seizes the breast and respiration they have an easy exit from life : it is indeed a fortunate event for the person thus miserably afflicted to be liberated from his pains and unseemly distortions ; it is likewise a relief and happiness to all that are present, even the nearest relations, whether a son or a father. But should the strength still suffice to protract life, and the breathing, although vitiated, yet continue, they are not only bent in the manner of a bow, but their figure resembles that of a sphere, so that the head is bent

between the knees, the posterior parts of the legs are refracted to the anterior, and the knee joint seems to be forced upon the ham.

This exhibits an inhuman calamity, an unpleasant sight, and a spectacle truly lamentable to behold ; but the malady is incurable, and the distortion so great that they are not known even by the nearest relations. It is now a becoming and an excusable prayer in all bystanders, however impious formerly, that the patient may depart this life, in order to be liberated from his excruciating pains and bitter misfortunes. Nor can the physician standing by and looking on be of the smallest assistance, either to life, to relieve from pain, or even to recover his former shape, for should he attempt to straighten the limbs, he tears and distracts the miserable, and now no longer able to contribute to those fettered by the disease, he only adds to their torment, which is truly the greatest calamity and misfortune that can possibly attend the physician.

THE CURE OF TETANUS.

It is necessary, in the cure of this disease, that the bed should be soft, pleasant to the touch, smooth, sweet, and warm, for the nerves become inflexible, hard, and stiff from the disease, besides the skin through its whole extension is squalid and rough, the *palpebræ*, naturally versatile and easy of flexion, scarcely cover the eyes, the eyes are fixed and convoluted at bottom, moreover the joints are immoveable from their tension ; the habitation of the patient must likewise be warm, and in summer not so as to provoke sweat or resolution of the nerves, because the disease has a tendency to *syncope*. It is likewise necessary not to defer putting in practice the other principal remedies, especially as there is no time for delay ; whether therefore *teta-*

nus arises from cold without any manifest cause, from a wound, or abortion, it is proper to let blood in the arm, taking great care that the compression of the bandage is easy, and that the aperture be made gently and with dexterity, because they are apt to excite convulsions; the patient ought to be blooded once in a moderate degree, not so as to produce *deliquium animi* or cold of the extremities, nor should he be emaciated from hunger, because hunger induces cold and dryness; his drink should be mulse thickened without any mixture, and the cream of *ptisan* with honey, for these excite the least pain and compression of the tonsils, they are smooth and very easily taken down, very efficacious likewise in softening the belly, and very powerful in recruiting the strength. The whole body must be wrapped in wool moistened with gleucine oil, or the oil of saffron, in which either rosemary, fleabane, or mugwort has been boiled, and every thing ought to be very warm to the touch; it should likewise be anointed with ointment made from *limnestis*, a marshy concretion, *euphorbium*, *nitre*, and *pellitory*, with an addition of a considerable quantity of castor oil; besides it will be proper to cover the tendons with wool, and to anoint the parts about the ears and chin, for these suffer grievously from the distension; the tendons too ought to be fomented with light fomentations, and the bladder with small bags containing millet seed roasted, or with bladders of oxen half full of warm oil, which should be applied along the whole extent of the places to be fomented. Sometimes necessity obliges to foment the head, but it is neither salutary for the senses, or nerves, because it suffuses the senses with a mist from the cloud of vapour which ascends, and affects the nerves. Wherefore the safest mode of fomenting ought to be practised, and materials chosen which do not emit a disagreeable smell: these should consist of oil in bladders, without stench, warmed in a double vessel, or of fine salts in a bag; for millet and linsseed are smooth and pleasant

to the touch, but emit a vapour and heavy smell. The mode of using the fomentations should be the following: the patient ought to lie on his back, and the fomentations should be subjected to the tendons as far as the vertex, but not to go beyond that to the *bregma*, because this place is the common *sensorium*, and from it originates whatever is of advantage or hurt to the system. But if cataplasms are to be superadded to the tendons, the *occiput* ought to be kept in a straight direction, for if it is raised upwards, the head will be filled with the exhalations arising from the lineseed and fenugreek, which constitute the materials of the cataplasms. After the cataplasms, the application of a cupping glass to the *occiput* on both sides of the spine will be highly useful; but the flame ought to be very moderate, for the compression of the lips of the glass is both painful and excites convulsion, it is better therefore to continue the drawing for a considerable time, and rather gently, than to draw much in a short space, for by so doing the place will be made convex without any pain, which ought to be cut, and let the strength of the patient be your guide in respect of the quantity of blood to be taken.

These are the remedies of *tetanus* arising from other causes than a wound: but should the convulsion be induced by a wound, it is dangerous, and there scarcely remains any hope of safety; nevertheless it is necessary to use every endeavour, since some have been saved from the remedies applied: besides other applications, it is highly proper to moisten the ulcers by such warm substances as have already been mentioned, likewise to apply fomentations, cataplasms, and medicines, which easily excite warmth and naturally promote a quantity of *pus*, for the ulcers which take place in *tetanus* are of a squalid and dry nature. Take therefore of the manna of frankincense, the leaves of *poley*, and the resin from the turpentine and pine

trees, with the root of marshmallows, likewise rue and the herb fleabane : these must be mixed in the cataplasms, some in a liquid form, others pulverized, and some macerated in oil ; the marshmallows must first be bruised, and afterwards boiled in mulse ; it is necessary likewise to sprinkle castor over the ulcer, hence no small degree of heat will be diffused over the whole body, because the shiverings, which take place from the ulcers, have a bad tendency. The nostrils ought likewise to be anointed with castor oil and a mixture of the ointment of saffron ; it will be proper too to drink frequently of the castor as much as is equal to the weight of three *oboli*, and if this proves nauseous to the stomach, the root of benzoin should be exhibited in quantity equal to the castor, or myrrh in half that quantity ; all these ought to be drank with mulse ; but if there is great abundance of the tears of benzoin which comes from *Cyrene*, as much of this as equals the bulk of a bitter vetch should be exhibited, after concealing it in a decoction of honey : in this form the patient is ignorant of its passing the palate, because it is acrid, and from its unpleasantness and bad smell excites eructations ; but if it cannot be swallowed in this manner, it should be exhibited in a liquid form after dissolving it in mulse, for it is the most powerful of all other drinks which are calculated to excite warmth or moisture, to relax the distension, or soften the nerves. Yet if the patients swallow nothing, it must be given by the *anus* along with castor oil ; the *anus* should likewise be anointed both with this ointment and honey ; it is necessary too that the bladder should be moistened and anointed with it after it is brought to a proper consistence with wax, and if it is time for voiding the *fæces* and getting rid of flatulency, two drachms of the purgative called *hiera* ought to be injected into the *anus*, along with mulse and oil, for besides that it brings away these, it warms both the intestines and inferior *venter* from its various, warming, medicinal qualities.

*Of the State in which Mercury exists, when combined with
unctuous Matters: by M. Vogel.*

It is known that animal fat acts more or less on several metals. Copper, for instance, gives it a green colour, when air can act jointly with it. The most important combination of this kind, however, is that of mercury with lard, in the common blue ointment of the shops. * Many apothecaries have endeavoured to improve the processes for medicines of this kind, by using certain intermedia; as honey, turpentine, or rancid oil. And Fourcroy has shown that fat, when oxygenized, is better adapted for the extinction of mercury, than in the simple and recent state. But it ought to be ascertained whether any and what change in the quality of the medicine takes place in the different processes; and especially what state the mercury is in, in these combinations; some supposing it to be oxidized by the friction employed in the process, while others imagine it to remain in the metallic state, and only in a state of extreme division. In order to discover which of these opinions was the true one, M. Vogel made the following experiments.

He triturated equal parts of lard and mercury in a mortar, which he had accurately weighed. When the mercury was completely extinguished, he weighed the mortar with the ointment in it, and found it had gained nothing. Hence he inferred, that the mercury, if oxidized, must have been so at the expense of the lard, and not by the oxygen of the air.

To discover the state of the mercury, he introduced this ointment recently prepared into a cylinder of glass hermetically sealed at one end, and kept it three hours in boiling wa-

ter. After it was cold, two very distinct strata appeared, the uppermost of which was white, like lard. From this he separated the lower by cutting the cylinder with a file. On braying this gently with hot water, three drachms three grains of running mercury were collected. The remainder, which obstinately retained a little lard, was treated with a lie of caustic potash. The soap formed was dissolved in alcohol, and thus the whole of the mercury was recovered.

He likewise separated the lard from the mercury by boiling the ointment in water. The lard swam on the top, slightly coloured by a little mercury, that adhered strongly to it; and the mercury remained at the bottom of the vessel, mixed with a little lard, but the slightest agitation united its globules.

The ointment being treated with muriatic acid in close vessels, no oxygenized muriatic gas was evolved.

Ointments that had been prepared three months, eight months, and several years, being examined, a little oxidized mercury was found, but the greater part was still in the metallic state.

M. Vogel likewise triturated mercury with Venice turpentine, which extinguished it with facility. The turpentine being then dissolved in alcohol, the mercury was left behind in little globules; and the alcohol being evaporated, the turpentine was recovered without any alteration in its properties.

In these ointments, therefore, the mercury is not in the state of oxide, as has generally been supposed, but merely divided very minutely. M. Vogel is likewise inclined to think, that it

is in a similar state in many mercurial compounds more or less in use, as the mercurial plaster of Vigo, ethiops saccharatus, ethiops alkalisatus, Plenck's gummy mercurial, and a number of similar mixtures. If the colour be objected, it may be observed, that antimony, however brilliant, bismuth, or any other metal capable of being powdered, becomes of a blackish grey when minutely divided.

Med. and Chir. Rev. vol. 15. p. lxxxii,

Method of whitening Sponges.

Suspend under a bell glass any quantity of supple, well washed, lightly moistened sponge. Then put into a glass or china saucer two or three drachms of the oxy-muriate of potash, and pour on it about an ounce of muriatic acid; place this immediately under the glass vessel along with the sponge. There is disengaged a great quantity of oxy-muriatic acid gas, which penetrates the sponge and deprives it of colour. The sponge after a time is to be withdrawn, and washed repeatedly in pure water, till deprived of the odour of the muriatic acid. Sponge thus prepared is of a beautiful light straw colour.

Ibid. p. lxxxvi,

Unfortunate Case in Midwifery.

A most lamentable case has lately occurred in the practice of midwifery in this metropolis (London), which we should not have mentioned, had it not been already made the subject of allusion in the daily newspapers. Nothing, in fact, can justify the publication of facts of this description, but the motive of

guarding others against similar errors. Medical men can never sufficiently reflect upon the importance it is of to their own comfort and reputation, as well as to the welfare of those for whom they are employed, to act in all cases with coolness and deliberation; to weigh well every step they are about to take, and its consequences; which otherwise, as in the case we are about to mention, may prove fatal to the object of their care, and to themselves a source of the most poignant regret for the remainder of their lives.

A female in the middle rank of life was delivered, without any unusual difficulty, of a healthy child, by a practitioner considerably advanced in life, whose name it would be cruelty to mention, since, however unhappy the event, there can be no doubt of his having acted with the best intentions. A small part only of the placenta was brought away, attached to the umbilical cord; the rest remaining behind in the uterus. This gave occasion to subsequent hæmorrhage, which continued to recur at times till the third day after delivery, when the practitioner being called, he judged it expedient to introduce the hand into the uterus, to unburden it of its contents. In endeavouring to effect this, the hand, either from too much violence, or possibly from a morbid state of parts, passed into the cavity of the abdomen; the body of the uterus, itself, with its appendages, was brought down, and a large portion of intestine immediately followed. By some infatuation, the consequence probably of alarm and trepidation, the practitioner seems not to have been aware of the injury that had been done: mistaking them, no doubt, for the placenta and membranes, he cut off with his scissars all that had passed the os externum, including the uterus and its appendages, and several feet of intestine detached from its peritonæal coat, which was left behind.

The event was such as might have been expected: the patient died under the operator's hands. An enquiry took place by the coroner and his jury, who returned a verdict of homicide; and the matter will probably undergo investigation in a court of justice.

This terrible misfortune (for such only can it be deemed to all the parties) cannot be accounted for but by supposing the practitioner to have been confused and alarmed to such a degree as to deprive him momentarily of his faculties and feeling; for he had been a great number of years in the extensive practice of midwifery, and was held in esteem by his employers for skill and humanity; he was likewise free from every propensity to indulge in the use of strong liquors. * He does not seem even to have been conscious of the mischief he had done; for not the least attempt was made at concealment, but the parts were put aside without caution, in the usual manner.

About twenty years ago, a case in many respects similar occurred to a physician of considerable eminence in this branch of the profession; with this difference, however, that the injury appears to have been committed knowingly, and for the purpose of concealment. In an attempt to turn the child, in a case of wrong presentation, the uterus burst, and the intestines came down. Convinced that the accident must prove fatal, the practitioner cut off and put in his pocket the protruded bowels, for the purpose of concealing the nature of the accident. The prying eyes of the nurse, however, discovered what had taken place; and the doctor, in order to avoid a prosecution, was compelled to abandon at once the profession and the metropolis.

It is scarcely necessary to observe what an important lesson is suggested to the practitioner of midwifery by these and similar instances ; not to lose his presence of mind under circumstances of difficulty and danger, whether he regards his own reputation, or the safety of his patient. In the exercise of this branch of the profession, men are often placed in situations of peculiar difficulty and embarrassment, from which nothing can relieve them but the utmost prudence and caution. It is not so much ignorance that is to be dreaded, in these cases, as rashness and precipitancy : the latter are, indeed, much less excusable than the former.

The event above described has excited no small sensation among the gentlemen-accoucheurs of the metropolis, who have held various consultations on the subject. It has been proposed, it is said, to take advantage of the circumstance, in order to endeavour to obtain a charter for establishing an obstetric college, for the regulation of this branch of the profession. The wisdom of such a measure, however, is very questionable. Many thinking men are of opinion, that the art of midwifery has already made too great strides among us, and got into too many male hands, for the honour or reputation of the female part of the community. Midwifery is unquestionably a part, and but a small part of surgery ; and ought not to be separated from it. The College of Physicians have determined wisely, in resolving to abolish, for the future, the class of licentiates in midwifery ; and the College of Surgeons would, we think, do well in adopting it. It is certainly a crying sin that this branch of the art should be open to every pretender, who chuses to assume it as an introduction to ordinary practice, without giving any proofs of education or acquirements in it. Yet so it is : there is no where lodged authority to examine and license, nor a power to interdict. Let a professorship of

midwifery be attached to the Court of Examiners of the College of Surgeons, whose province it should be to examine and certify with regard to the qualifications of candidates for this branch of practice, and without whose license none should be suffered to assume it. This would sufficiently meet the evil, and is perhaps all that ought to be attempted.

Ibid. p. xcii.

Charge of Murder against an Accoucheur. From a late London Paper.

— Williamson was indicted for the wilful murder of Anne de la Croix, in his conduct in the case of her delivery. This case, which occupied a considerable time, was in its nature too horrid to bear a minute detail. The evidence of the facts, as given by the nurse, in the outline was as follows: that the prisoner was sent for to assist the wife of Charles de la Croix, who resided in Poland-street, in her lying-in. She was delivered of the child on the 18th of September; but, some untoward symptoms following, the prisoner came again on the 20th, and then attempted to complete the delivery. From the detail, however, it appeared, that he committed a most gross error, and brought away several vital parts, the patient having expired under the operation. The nurse said, she had been at several labours with him before, and he always appeared a man of humanity, and, in this instance, he appeared to act with great kindness towards his patient; and Mrs. de la Croix was much attached to him, having often expressed herself, that she should never be happy under the hands of any other man.

Drs. Denman, Coombe, Cairne, and Boys, and Messrs. Newby and son, with Mr. Banks, professor of anatomy, seve-

rally gave an account of the injury done to the unfortunate woman, which neither delicacy nor humanity suffers us to detail. They all agreed it was most gross ignorance, and such as could hardly be accounted for in any man of common sense, not even knowing the rudiments of anatomy. Drs. Coombe and Denman said, they believed it must have been that the man having originally committed a great error, which he was afterwards sensible of, he became alarmed, confused, and lost all the powers of his mind; after which he went on at random, until he destroyed his patient.

Lord Ellenborough held, that there must be malice to constitute it a murder, and that the negligence must amount to a criminal degree of it. It would be dangerous if want of skill were to be evidence of malice, because skill was comparative. There was no doubt but this man had acted with gross ignorance; but there did not seem any circumstance to imply it was wilfully done. The jury found him *not guilty*.

Decomposition of the Fixed Alkalies.

We have to announce a discovery in chemistry by Mr. Davy, unquestionably the most brilliant that has been made since that of the decomposition of water by our celebrated countryman, Mr. Cavendish, and which opens a new and almost boundless field for future investigation. It is, doubtless, highly flattering to the feelings of Englishmen, that they should have been the authors of almost all the most important discoveries made in modern chemistry, leaving little more to our Gallic rivals than the merit of generalizing, and reducing into system,

the labours of others; fully justifying the claim to pre-eminence of freemen over slaves, in arts as well as arms; a pre-eminence which, it is to be hoped, Englishmen will always contend for and maintain.

At the late meetings of the Royal Society, a paper by Mr. Davy was read, detailing a number of experiments, in which he succeeded in decomposing the fixed alkalis, substances which have hitherto been ranked among elementary bodies. By means of a most powerful galvanic apparatus, both potash and soda were decomposed. This was effected by placing the moistened salt on a plate of platina, and exposing it to the galvanic action. Oxygen gas was disengaged, and small globules were perceived, of a metallic appearance, and similar to the globules of mercury. Upon examination, they were found to possess all the properties of a metal, but of a very peculiar kind.

The specific gravity of these globules, as procured from potash, was considerably less than that of distilled water, and they were found to swim even in distilled naphtha. At the freezing point of water (32° F.) they were hard and brittle; at 40° they could scarcely be distinguished from quicksilver; at 60° they were fluid; and at 100° volatile. One of the most striking properties of this new metal is its inflammability, in which respect it exceeds even phosphorus. When exposed to the atmosphere, it rapidly imbibes oxygen, and re-assumes its alkaline character; it takes oxygen from water, and even from alcohol; so that the only fluid in which it can be kept is naphtha.

Mr. Davy afterwards proved the metallic nature of this new substance, by amalgamating it with different metals. One part by weight of this new metal, with forty-eight of mercury,

formed an amalgam, which, when applied in the circle of a galvanic battery (that produced an intense heat) to iron, silver, gold, or platina, immediately dissolved these, and converted them into oxides, in which process alkali was regenerated. Glass, as well as all other metallic bodies, was also dissolved by the application of this substance: the base of the alkali seizing the oxygen of the manganese and of the minium, potash was regenerated. One of the globules placed on a piece of ice dissolved it, and burnt with a bright flame, giving out an intense heat. Potash was then found in the dissolved ice. Nearly the same effects followed when a globule was thrown into water; and in both cases a great quantity of hydrogen gas was liberated. When laid on a piece of moistened turmeric paper, the globule seemed instantly to acquire intense heat; but so rapid was its movement in quest of the moisture, that no part of the paper was burnt, only an intense deep red stain marked the course it followed, showing a reproduction of alkali.

Soda, submitted to the same train of investigation, gave results very similar; but the metallic base was found to possess some peculiar properties. Its specific gravity was rather greater than that of the base of potash. It was fixed at a temperature of 150° , and fluid at 180° .

From the medium of numerous analytical and synthetical experiments, it appeared that 100 parts of potash consist of 15 oxygen, and 85 of the inflammable base or metal; while the same quantity of soda contains 20 of oxygen, and 80 of the base.

Mr. Davy afterwards examined the volatile alkali, which is commonly considered as consisting of hydrogen and nitrogen:

he found, by numerous experiments, that oxygen is likewise a constituent part of this alkali, 100 grains of the latter yielding 20 of oxygen.

Other experiments served to convince Mr. Davy that oxygen is a constituent principle in the muriatic and fluoric acids, which chemists have been hitherto unable to decompose. He likewise examined some of the primitive earths, as they are called, particularly barytes and strontites, both of which yielded considerable quantities of oxygen. This renders it probable that these and the other alkaline earths which resemble the alkalies so strongly, are, like these, compounded bodies, each with its peculiar base.

These novel and interesting facts show the necessity of reforming the nomenclature of chemistry. If oxygen really be an essential ingredient in the constitution of the alkalies, as the experiments above alluded to leave no room to doubt, the impropriety of the term oxygen is manifest.

Med. and Chir. Rev. vol. 16. p. x.

Harrup's Ideas of Atmospheric Oxygen unfounded.

Mr. Robert Harrup, of Cobham, Great Britain, has asserted, in the fifth volume of Nicholson's Chemical Journal, that the oxygenous portion of atmospheric air is supplied by the decomposition of water, by means of light and azotic gas.

He exposed azotic air to the action of light and pump water for several months, and declares, that, at the expiration of this time, he procured an air purer than that of the atmosphere.

This experiment has been repeated, without success, by Dr. Woodhouse. The doctor exposed a number of bell glasses, containing distilled water and azotic air, confined by mercury, to the action of solar light for several months, and did not find the air in the least altered.

It is well known that pump water contains oxygen gas.

If there was a decomposition of water in Mr. Harrup's experiment, what becomes of its hydrogen?

Antediluvian Vaccination !

Dr. Valentine, of Marseilles, has lately informed Dr. Rush, by letter, that Mr. Cherreuse, an apothecary and botanist at Metz, in the department of Mozelle, had vaccinated a child of four years old, in which the disease did not appear upon the arm until *one year* afterwards, when it ran its course with its usual appearances and order!!!!

Gold Medal Prize.

The Medical Lyceum of Philadelphia, desirous of promoting the investigation of physiology, offer a gold medal, of the value of fifty dollars, to the author of the best essay on the following question :

“ Does the human body possess the power of absorbing substances applied to its surface ? ”

The essay must be written in the English language, and delivered to the corresponding secretary of the Lyceum, on or before the first day of January, 1809, with a sealed paper, containing the name of the author, which paper shall not be opened, unless the medal is adjudged to the essay it accompanics.

Editors of newspapers, medical, or other periodical works, are requested to promote the publicity of this through the medium of their several publications.

J. C. ROUSSEAU, M. D. *Corresponding Secretary.*
Philadelphia, Feb. 5th, 1808.

*Observations on the Plagiarisms of the Editors of the London
Medical and Physical Journal.*

In many occurrences of life, there is a point, when our rights are invaded, and due attention is not paid to justice, beyond which silence becomes criminal. Such a point the editors of the London Medical and Physical Journal have now reached; and a sense of what is due to myself, compels me, unwillingly, to expose the conduct of persons who certainly know the common principles of rectitude due from one editor to another. I have, in some of the preceding numbers of the Museum, declared my intention of exposing their plagiarisms; and I cannot but think every friend of justice will allow that I act with propriety, in endeavouring to arrest such improper proceedings. I would ask these editors, what difference they can perceive between robbing a person of his literary or other property? When due credit is given for the sources from whence their publication proceeds, I certainly shall not complain; but seeing, as is the case, whole volumes of the Medical Museum gutted to supply their

wants, without the slightest acknowledgment for the same; and when I see some of the most valuable parts of their work composed of my materials, without saying whence obtained; I must consider it high time to notice such proceedings, in which every honourable editor is as much interested as myself.

But this is not the whole; a more serious fault still remained for the editors of the London Medical and Physical Journal to employ, and which I have detected, in number 107, of their work, which has just reached me. I mean, that of altering words in a communication, so as to make it appear, that the paper taken from the Medical Museum, was sent to them. What can be the reason of their omitting, except when they could not avoid it, crediting my work with their extracts, is best known to themselves; but as it has reached that pass, that papers printed by me are published as sent to them, it becomes my duty to unveil this deceit, as much in justice to their respectable subscribers, as to myself. I shall therefore here briefly enumerate the documents which they have taken from me. I find the editors of the New York Medical Repository have the same cause of complaint with myself, and shall be happy in their co-operation to prevent this unjust and ungenerous procedure. I have only to add, that I shall certainly not hesitate, if this mode is continued, to send over an account of it to the public papers in London, that the readers of the Journal may know the source from which many of the communications they read, are derived.

In Vol. XIV. we have Dr. John Rush's case of resuscitation.

Dr. Benjamin Rush's paper on sugar of lead in epilepsy.

Dr. Otto, on arsenic in three cases of eruption.

And a paper on tetanus, by the editor.

Of these papers, comprising about fourteen pages, only that of Dr. Otto is acknowledged as taken from the Museum; and the case of tetanus is a second time introduced, into their XVIIth volume, without acknowledgment.

Vol. XVII. Dr. Barstow's account of the singular effects of the bite of a rattle-snake.

Dr. Dewees's essay on superfœtation.

Dr. Pascalis's case of abscess of the liver.

Dr. Watkins, on yeast in typhus fever.

All these, of nearly fourteen pages, have no acknowledgment.

Vol. XVIII. Dr. Ffirth, on nitric acid in hepatitis.

Dr. Coxe, on a case of burn (second time).

Dr. Rousseau, on the resuscitation of a new-born child.

Dr. Smith's case of hemoptoe.

Dr. Watson, on mercury in consumption.

Dr. Stringham, on the diuretic effects of mercury.

Dr. Shaw's case of wounded lungs.

Dr. Dewees, on blood-letting in difficult parturition.

Dr. Coxe, on tinea capitis.

Dr. Elmer, on mortification of the uterus.

Dr. Budd's case of disease from corrosive sublimate.

Dr. Shaw, on tobacco bougies.

A. B. on puerperal convulsions.

Dr. Spence, on saccharum saturni in epilepsy.

Dr. Dorsey's case of wounded brain.

Mr. Johnson, on fever, &c. relieved by electricity.

Dr. Sayre, on worms in the vagina and ear.

Dr. Coxe, on tetanus (second time).

Dr. Physick, on blisters in mortification.

— Jennings, on labour in phthisis.

Dr. Dewees, on parturition.

Case of wounded intestines.

Of the above, about one-half are acknowledged; the remainder are not.

Vol. XIX. (Nos. 1. & 2.) Dr. M'Dowel, on the cure of consumption by mercury.

Dr. Harris's case of hydrocephalus.

Dr. Rush, on the cure of phthisis by opium, &c.

Dr. Vaughan*, on olive-oil as a purgative, &c. &c.

Dr. Stuart, on the injurious effects of leeches.

Dr. Mitchell, on saccharum saturni in uterine hemorrhage.

Dr. Auld, on the cure of bilious fever by nitric acid.

* This is the paper introduced as written to them:

Dr. Mease, on mercury in typhus and tetanus.

Dr. Mease, on rousing the excitability by the cold bath.

Dr. Humphries, on palsy cured by lightning, &c.

Observations on diseases subsequent to measles, &c. &c.

Dr. Smith, on a disease of the stomach, &c.

Dr. Wadsworth's account of a dissection.

None of these are acknowledged.

It would appear, that considerably more than one-half of the above papers are printed without any acknowledgment of the source whence derived; and I have only made this claim to my own rights, from a perfect conviction of my having endeavoured, in every instance, to do justice to the sources from which I have borrowed for the Medical Museum.

I have said nothing of the mutilation of some of the papers, by which portions are omitted which might lead to a knowledge of the source of the communication.

At a meeting of the Medical Society of the state of New York, holden at the City-Hall of the city of Albany, on the first Tuesday of February, 1808, the following physicians were elected to the offices annexed to their respective names:

Dr. NICHOLAS ROMEYNE, *President.*

Dr. ALEXANDER SHELDON, *Vice-President.*

Dr. JOHN STEARNS, *Secretary.*

Dr. JAMES G. GRAHAM, *Treasurer.*

Dr. Lyman Cook,

Dr. John M. Mann,

Dr. William Wheeler,

Dr. David R. Arnell,

Dr. Westel Willoughby,

Dr. John Ely,

Dr. Alexander Sheldon,

Dr. Jesse Shepherd,

Dr. Reuben Hart,

Dr. Barnabas Smith,

} *Censors.*

} *Committee of Correspondence.*

Memoirs of the Life and Character of JOHN REDMAN, M. D.

DR. JOHN REDMAN was born in Philadelphia, on the 27th of February, 1722. His parents early destined him to fill one of the liberal professions, for which purpose he was sent to the Rev. Mr. Tennent's academy, at Neshaminy, in Bucks county, where he acquired a correct knowledge of the Latin and Greek languages, and a general acquaintance with such of the sciences as were then taught in public schools. His companions and schoolmates in this academy, were his preceptor's sons, the Rev. Gilbert, William, and Charles Tennent, the Rev. Daniel Lawrence, and the Rev. Dr. Rogers, of New York, with all of whom, during their lives, he kept up a friendly intercourse. After finishing his academical education he entered upon the study of physic with Dr. John Kearsely, then one of the most respectable physicians in Philadelphia. He served his master faithfully, and acquired, during the period of his studies, the esteem and confidence of all his patients. After the expiration of his apprenticeship, he went to the island of Bermuda, where he exercised his profession for several years, and acquired so much money as enabled him, with the property he inherited from his father, and a small loan from his relation, judge Allen, to proceed from thence to Europe, for the purpose of completing his studies in medicine. He spent a year in Edinburgh, while the medical school of that city was in the hands of the first Monroe, Sinclair, Alston, Plummer, and Rutherford. He likewise passed a year in attending Guy's Hospital*, and some time in attending lectures, dissec-

* The following is a copy of a certificate of his attendance upon that hospital:

“ We think the character of Dr. John Redman so much deserves our approbation, that it is with pleasure we can say, that after having spent a considerable

tions, and hospitals in Paris. Copies of the lectures of the above professors, and notes of the cases which occurred in the hospitals, while he attended them, are now in the possession of his grandson, Dr. John Redman Coxe, written with singular correctness and perspicuity. He graduated in the University of Leyden, on the 15th of July, in the year 1748, under the celebrated Albinus, Gaubius, and Musschenbroek, and at a time when that seminary retained a large portion of the reputation it had derived from the illustrious name of Dr. Boerhaave. The subject of his inaugural dissertation was "Abortion," which he handled with great learning and ingenuity. Few better essays upon that subject are to be met with in any language. The conclusion of this dissertation strongly indicates the piety which distinguished the early part of his life:

"Faxit Deus Ter Opt. Max. ut hæcce mea studia et conamina dirigantur in nominis sui gloriam, proximorumque salutem*."

After receiving the highest medical honours in his profession, he returned to his native country, and settled in Philadelphia. He soon succeeded in business, and, in the course of a few years, ranked among the oldest physicians in the city, in point of celebrity in medicine. For a while he practised surgery and midwifery; but, finding the labours of those branches of medicine

able time in the universities of Edinburgh and Leyden, in which last he had the degree of doctor of physic conferred on him, and made all the improvements necessary to the knowledge of physic, he has with great application attended the practice of this hospital, by which means he has so well qualified himself, that we doubt not his future success will answer to the care and pains he has taken to deserve it.

(Signed)

— Clarke, M. D.

Guy's Hospital,
Feb. 21, 1748-9.

Chars. Feake, M. D.
N. Munckley, M. D.

* God grant that my studies and labours may be directed to the glory of his name, and to the welfare of my neighbours.

incompatible with the delicacy of his health, he declined them, and confined himself exclusively to the practice of physic.

His principles in medicine were derived from the writings of Dr. Boerhaave, but his practice was formed by the rules of Dr. Sydenham. He early saw that the modes of practice which were recommended by that enlightened physician, in the seventeenth century, in England, were equally proper, in the eighteenth century, in America, from the sameness of the manners of the inhabitants of both countries, in those different periods of time. He saw distinctly the truth of Dr. Sydenham's remarks upon the laws of epidemics, and regulated his practice by them. He considered a greater *force* of medicine necessary to cure modern American, than modern British diseases, and hence he was a decided friend to depletion in all the violent diseases of our country. He bled freely in the yellow fever of 1762, and threw the weight of his venerable name into the scale of the same remedy in the year 1793. In the diseases of old age, he considered small and frequent bleedings as the first of remedies; and to them he was indebted for much of the ease he enjoyed in his descent down the hill of life. Towards the close of his life, he read the works of Cullen, Brown, and several other physicians, who had called in question the truth of Dr. Boerhaave's principles in medicine. He admitted their objections, and embraced some of the modern opinions and modes of practice, with the avidity of a young man of five and twenty. He published, about the year 1759, a defence of inoculation, and advised the use of mercury to prepare the body for the reception of the small-pox. He entertained a high opinion of that heroic medicine in all chronic diseases. He gave it in the natural small-pox, with a view of touching the salivary glands about the turn of the pox, a time in which patients often die, from the whole force of the disease falling upon the wind-pipe and lungs. He introduced the use of turbeth mineral as an emetic in the gangrenous sore throat of

1764; and, such was its efficacy, that he did not lose a patient who took it in the early stage of that epidemic.

About the fortieth year of his age, he was afflicted with an abscess in his liver, the contents of which were discharged by expectoration through his lungs. He was frequently confined by acute diseases, and suffered much from the rheumatism as he advanced in years. These facts are mentioned to show, that frequent attacks of violent diseases, when treated properly, do not prevent the attainment of extreme old age.

His fellow-citizens, and his medical brethren, were not insensible of his merit. He was elected one of the physicians of the Pennsylvania Hospital immediately after its establishment, and afterwards the first president of the College of Physicians of Philadelphia. He discharged the duties of these stations faithfully, and reluctantly retired from them, in consequence of the weakness and infirmities of age. He served as a trustee of the colleges of Philadelphia and New Jersey for many years, and more than once refused to stand a candidate for a seat in the legislature of Pennsylvania, before the American revolution.

He was faithful and punctual in his attendance upon his patients. In a sick room he possessed virtues and talents of a specific kind. He suspended pain by his soothing manner, or chased it away by his conversation, which was occasionally facetious and full of anecdotes, or serious and instructing, according to the nature of his patients' diseases, or the state of their minds. A lady, whom he attended in a fatal consumption, said to one of her friends, that "death had nothing terrible in it when Dr. Redman spoke to her about it." The respectability of his character as a physician will derive a lustre from the history of his domestic and religious character.

He married Miss Mary Sobers, a lady of uncommon talents and accomplishments of mind and body, soon after he settled in Philadelphia, by whom he had two sons and two daughters. His sons died in their infancy. In the year 1770, his elder

daughter married Daniel Coxe, Esq. one of the king's counsel of New Jersey. This gentleman adhered to the royal party during the American revolution, in consequence of which he went to England, whither he was followed by his wife and children, in the year 1785. The separation of this daughter was to her father a most poignant affliction. He accompanied her with tears to the vessel that conveyed her from his sight; but his distress was soon alleviated by the suggestions of religion. These he expressed the next day to a friend, whom he informed, that his mind had been composed by reflecting upon the following words of our Saviour: "He that loveth father or mother more than me, is not worthy of me; and he that loveth son or daughter more than me, is not worthy of me."

He was remarkably attached to all the branches of his family, even to those who were distantly related to him, or who were in indigent circumstances. His only brother, Joseph Redman, formerly a merchant in Philadelphia, partook of his affections in an uncommon degree. He died in the autumn of 1779. The doctor sat in the room with his corpse, while the company were assembling to attend his funeral. Just before the lid of his coffin concealed him for ever from his sight, the doctor rose from his seat, and, grasping the lifeless hand of his brother, he turned round to his children, and other relatives in the room, and addressed them in the following words: "I declare, in the presence of God, and of this company, that, in the whole course of our lives, no angry word nor look has ever passed between this dear brother and me." He then kneeled down by the side of his coffin, and, in the most fervent manner, implored the protection and favour of God to his widow and children.

In the early and middle stages of his life, he was not ashamed of the gospel of Christ, and liberally contributed to its support; but the evening of his life was the meridian of his piety. Being easy in his circumstances, and feeling the labours of his

profession incompatible with his health, he early declined business; but it was to engage in business of another kind. He was elected an elder of the Second Presbyterian Church, in the year 1784. The duties of this office gave him both employment and delight. He gave secretly and liberally to the poor, from a principle of charity, and, when confined by sickness, he conveyed his bounty to them by the hands of a friend. He visited his old patients regularly two or three times a-year, and always left behind him some pious remarks, or anecdotes, that were not soon forgotten. His conversation was facetious, animated, free from the querulousness of old age; and always seasoned with the grace of the gospel. In his own house he passed his time chiefly in reading books of devotion, and in other religious exercises. He thought humbly of himself, and often lamented his slender attainments in religion. For some years before his death, he heard and read with difficulty, from the decay of his hearing and eye-sight; but, under the pressure of these evils, he was so far from complaining, that he was constantly finding out reasons why he should be contented and thankful. Such was the natural cheerfulness of his temper, that upon serious subjects he was never grave. He spoke often of death, and of the scenes which await the soul after its separation from the body, with the same composure that some men speak of going to bed, or visiting a new and pleasant country. It remains only to be added under this head, that he was a stranger to bigotry, and that he often worshipped with sects of christians that differed in principle and forms from the one with which he was united.

With all the virtues and piety which have been ascribed to him, it would be unjust to conceal, that he possessed, in the early and middle stages of life, a quick and irritable temper. But the sun never went down upon his anger; and to his pupils and servants, he has been known to make acknowledgments for even a hasty expression. The admission of this infirmity

in the character of Dr. Redman will make it necessary to distinguish between a passionate temper, and a bad disposition. The former is a transient emotion, and often exists with candour, sincerity, and benevolence. The latter is a settled principle, and vents itself in cool and protracted acts of malice and revenge.

In the month of December, 1806, his younger daughter died. She had lived with her parents for fifty years, and secluded herself from society, in order to soothe their declining years. Her death left them in a state of the most distressing solitude, and at a time when they were least able to bear it. His elder daughter, who had been separated from him nearly four and twenty years, upon hearing of the death of her sister, immediately tore herself from her husband and children, and crossed the ocean, to alleviate, by her presence, the grief of her bereaved parents. Her arrival exhibited a scene of joy such as seldom occurs in domestic history. The good old man said to a friend, upon this occasion, "that he had formerly owed ten thousand talents to his Maker, but that his debt had increased so much by the arrival of his daughter, that he was determined to become bankrupt, and throw himself entirely upon the mercy of his divine creditor." The lamp of life, which was nearly extinguished in him and his wife, suddenly blazed forth upon this occasion; but it was only to consume the oil which fed it with the more rapidity. Mrs. Redman died on the 29th of November, two months after the sight of her daughter, in the eighty-fourth year of her age. The distress occasioned by this event was severely felt by her husband. They had passed nearly sixty years together, in the most uninterrupted harmony. She was his best friend, and wisest counsellor, in all the trials and difficulties of his life.

His affections now centered themselves wholly in his surviving daughter: but time and nature forbade the long duration of this last portion of social happiness. On Friday, the 18th

of March, he took a walk to his grandson's. In the afternoon, he discovered an unusual degree of sprightliness in his conversation. After drinking tea, he rose to light a candle, in order to go into an adjoining room. In attempting to walk, he staggered, and was led to a chair by his daughter. He squeezed her hand, and gave her a look which indicated his belief, that the time of his departure had arrived. His disease almost immediately assumed all the symptoms of apoplexy, of which he died without pain, and apparently without the least consciousness of his situation, about five o'clock the next day, aged eighty-six years and twenty days. It would seem, from the easy manner in which he expired, that the messenger of death had been instructed to blindfold him, in order to conceal from his view the dreary objects which sometimes surround the passage out of life.

He was buried, at his request, in the presbyterian church-yard, in Arch-street, exactly in the same spot in which his mother had been interred, fifty years before him. This attachment to the dust of our ancestors, though a deep seated principle in human nature, is seldom felt, except in old age, or in the hour of death. Its extent is universal. Its final cause is no doubt a wise one, but this is not the place to inquire into it.

To those who may read the account that has been given of this excellent physician, and eminent christian, without knowing him, it may not be amiss to add, that he was somewhat below the middle stature; his complexion was dark, his eyes black, and uncommonly animated; and his manner, both in gesture and speech, such as indicated a mind always busy, and teeming with new and original conceptions of human and divine things.

The Editor must request those gentlemen who favour him with communications, and also those who occasionally send to him for vaccine matter, to pay the postage, which is often neglected, and amounts to several dollars in the course of a year. He has now on hand, one from a distant state, which cost him seventy-five cents.

MEDICAL AND PHILOSOPHICAL
REGISTER.

VOL. V.....No. II.

FOREIGN AND DOMESTIC.

College of Medicine of Maryland.

THE legislature of this state have passed, at their late session, an act to establish a medical school in Baltimore, by the name of "*The College of Medicine of Maryland.*" We have every reason to believe, that, if those who are entrusted with the carrying of this act into effect will exert themselves, this institution will prove of material benefit to the city of Baltimore and to the state of Maryland. In no part of the union is there another place, whose local advantages are superior to those of Baltimore, for the encouragement of such a seminary. In none of the large towns to the southward can the important science of anatomy be cultivated for any great portion of the year, without inconveniences sufficient to damp the ardour of its most zealous votaries.

In Baltimore, the continuance of cold or temperate weather enables the dissector to pursue his investigations for at least six months in the year. Nor is the climate on the other hand so chilling as to preclude the botanist from extending his researches. Most of the plants of warm climates will thrive in the open air in summer, and in winter they may be protected by artificial warmth. The productions of colder climates are not unknown, and in the shade of the neighbouring woods we find many of the vegetables that are found in the forests of Canada. From the central situation of Baltimore, in the heart of the union, connected with a great part of it by navigable waters, or by roads which are every day more frequented, it cannot fail to be an eligible residence for such young men as travel from home to complete their education. Here, where they have daily opportunities of communication with their places of residence, and frequent occasions of meeting with persons to whom they are known, they will be in a degree less removed from home, than if they were where these circumstances do not exist. Baltimore may also boast the advantage of presenting fewer incentives to idleness and dissipation than other large towns upon the continent.

With respect to its public institutions, there are several that may be rendered subservient to medical instruction. The alms-house, the city and the marine hospitals, all present a fund of illustrations of the doctrines that may be delivered in the college. The public library contains no inconsiderable collection of books upon medical science, to which any one may have access upon paying a moderate compensation. To those, too, who wish to perfect themselves in other branches of education, an opportunity is offered in two other colleges, wherein the sciences are cultivated with unabating zeal. The

college of medicine is the third collegiate institution that has been founded in Baltimore; so that we may now justly allow this city a fair claim to be styled an university.

In framing the charter of the college, very ample privileges have been granted to it. The government of the whole is vested in the professors, together with the members of the board of medical examiners for this state; who are jointly styled the Regents of the College of Medicine of Maryland. They are enabled by their charter to hold property to the value of 30,000 dollars per annum, and are authorized to raise 40,000 dollars by lottery. They are authorized to appoint the professors of such branches of medical knowledge as they deem necessary to be taught, and also to appoint lecturers upon those departments of science which are indirectly connected with medicine.

The zeal of the present members of the college, and the favour with which their undertaking has been received by the citizens of Baltimore, lead us to augur well of their success. The professors of anatomy and chemistry have already entered upon the duties of their office, and have continued to lecture, since the commencement of the season, to classes far more numerous than could have been expected from the short notice that was given of their intentions. In the beginning of next winter all the professors will assume their functions.

The following are the officers of the college :

President, Dr. Brown,

Secretary, Dr. Cocke,

Treasurer, Dr. Birckhead.

Regents,	Drs. Birckhead	}	of Baltimore.
	Bond		
	Brown		
	Cocke		
	Crawford		
	Davidge		
	Donaldson		
	Potter		
	Shaw		
	Dr. Warfield,	of Anne Arundel county.	
	Drs. Anderson	}	of the Eastern Shore.
	Johnston		
	Martin		
	Noel		
	Thomas		

Medical Faculty of the College.

Drs. Davidge } Adjunct professors of Anatomy,
and Cocke } Physiology and Surgery.

Dr. Shaw, Professor of Chemistry.

Dr. Bond, Professor of Materia Medica.

Dr. Donaldson, Professor of the Institutes of Medicine.

Dr. Potter, Professor of the Practice of Physick ; and

Dr. Davidge, Dean of Faculty.

The medical and chirurgical faculty of the state are patrons and visitors of the college, and their present president, Dr. Philip Thomas, of Fredericktown, is, *ex officio*, chancellor of the same.

Balt. Med. & Phys. Rec. No. 1.

The following arrangement of officers in the College of Physicians and Surgeons in the city of New York, has lately been made by the regents of the university.

NICHOLAS ROMAYNE, *President.*

SAMUEL L. MITCHILL, }
HUGH WILLIAMSON, } *Vice Presidents,*

ARCHIBALD BRUCE, *Register.*

JOHN D. GILLESPIE, *Treasurer.*

Censors.

JAMES G. GRAHAM, *of Ulster county.*

PETER C. ADAMS, *of Greene.*

WESTEL WILLOUGHBY, *jun. of Herkimer.*

LYMAN COOK, *of Westchester.*

DAVID R. ARNELL, *of Orange.*

JOHN STEARNS, *of Saratoga.*

HENRY VAN SOLINGEN, *of New York.*

SAMUEL TORBERT, *of do.*

JOHN D. JAQUES, *of do.*

GEORGE W. CHAPMAN, *of do.*

JOHN C. OSBORN, *of do.*

ANDREW HUNT, *of do.*

Professors.

NICHOLAS ROMAYNE, *Professor of the Institutes of Medicine.*

SAMUEL L. MITCHILL, *Professor of Natural History and Botany.*

EDWARD MILLER, *Professor of the Practice of Physic.*

WILLIAM JAMES M'NEVEN, *Professor of Midwifery.*

BENJAMIN DE WITT, *Professor of Chemistry.*

ARCHIBALD BRUCE, *Professor of Mineralogy.*

JOHN A. SMITH, *Professor of Anatomy and Surgery.*

Med. Rcp. No. 43.

Communication.

The great exertions of the states of New York and Maryland, in the establishment and increase of their medical schools, should certainly prove a stimulus to the medical faculty of this university to support, by every honourable exertion, their well established celebrity. The relaxation in the mode of conferring degrees, by rendering unnecessary the printing of a thesis*, the want of a botanic garden, and the slight attention given to so important a branch of science in this country, as that of mineralogy, certainly do not augur favourably; and the backwardness of our legislature, compared with those of the above states, cannot but be highly injurious. The estimation in which the present professors are held, will not last beyond themselves, unless exertions are made to transmit the mantle of Elijah to their successors.

The once celebrated schools of Italy and Holland, without their still more celebrated professors, have in a few years sunk to nothing, in consequence of the rise of other schools, where private exertions unite with public munificence to encourage and uphold the estimation they have acquired. Let not a presumed confidence of present superiority blind us to the future; but let the exertions of others augment our ardour to

* We may add here, in proof of the remissness exhibited to uphold the name of this university, that upwards of sixty gentlemen graduated the last spring, and received the honours of our medical school, whose names have never yet been given to the public. It is not presumed to surmise where this neglect lies, but it is a neglect which probably may help to influence the future fate of the university. To this cause may be ascribed the non-appearance of the names of the candidates in the present number of this Museum. E.

keep the station we at present hold; or, in a few years, we shall be but the "*nominis umbra*" of what we are. Let our legislature seriously consider the sacred trust committed to them; and strive by every means to aid that institution which, amongst others, so greatly tends to augment the fame of the state of Pennsylvania.

History of Diseases, &c. from Ancient Authors.

NO. II.

ANGINA*.

Angina, or the *Synanchè* of the Greeks, being a stifling of the breath, is a very acute affection, of which there are two species, for it is either an inflammation of the organs of respiration, or an affection of the breathing alone, having the cause within itself, without any sign of inflammation. The organs subjected to this disease are the tonsils, the epiglottis, the fauces, uvula, columella, commonly called the pap, and the high artery; but if the inflammation spreads, it likewise extends to the tongue and the interior maxillæ: in this case the tongue is obtruded beyond the teeth, from the excess of inflammation; for it fills the whole cavity of the mouth, and the redundancy is exerted over the teeth. This affection is called, by the Greeks, *cynanchè*, denominating a canine affection, either from dogs being affected with this disease, or from these animals

* Aretæus, Book I. Chap. II.

thrusting out their tongues, even in a state of health. In the other species, the contrary symptoms happen. There is a collapse of the organs of respiration, and a more than usual gracility or tenuity of each; violent suffocation takes place, so that the persons affected with it appear to have a secret and hidden inflammation in the thorax and circumjacent places around the heart and lungs. This species we call *angina*, from its internal oppression and strangulation. But the malady appears to me to be seated in, and an affection solely of the breathing, from its being vitiously converted into the greatest possible degree of dryness and heat, without any part of the body labouring under inflammation. Nor is this to be wondered at; for, among the Charonæi, the most acute and instantaneous suffocations happen where there is no visible affection of the body. Moreover, men die from a single inspiration, before the body can possibly contract any thing bad, either from inflammation or otherwise; besides, it has been observed, that a person has been affected with the *rabies canina*, or canine madness, from a mad dog having only breathed in the face during the time of inspiration, and where there has been no bite. It is therefore by no means impossible that there should be such a change wrought in the respiration internally, since an infinite number of those things that befall men has the same appearance and operation as if they proceeded from external causes: there are destroying juices both within and without the body; there are diseases, likewise, that resemble in their effects deleterious medicines; and it has been observed, that the vomiting produced both by poison and fevers are of a like quality. Hence it is neither foreign nor contradictory to reason, that, during the plague raging at Athens, some should think poison had been thrown into the wells of the Piræeum by the Peloponnesians, because men were ignorant

of the resemblance which the pestilence had to poisonous medicines.

The concomitant symptoms of the *cynanchè*, or *canis angina*, are an inflammation of the tonsils, the fauces, and of the whole mouth; the tongue falls over the teeth and lips; there is a profusion of saliva; the phlegm runs down very thick and cold; the face is red and inflated; the eyes stand out, are full, and very red; whatever is drank is thrown out by the nostrils; the pains are sharp and violent; but the patient, persecuted with suffocation, feels them *only* but obscurely; the breast and heart are affected with a burning heat; the desire of cold air is vehement; the inspiration is extremely small, till, at last, suffocation takes place, from an entire exclusion of the air to the thorax. In some, the disease communicates easily with the lungs; but those die from *metastasis*, or the change which ensues: dull, sluggish fevers arise, without making any sensible progress; but, if any one experiences a change to the better, abscesses happen here and there, about the ears and the tonsils, externally or internally; and, if their progress is not very slow, attended with torpor, the patient survives, but not without great pain and danger. If, however, on the disease changing to an abscess, should a large tumour make its appearance, and the abscess rise into a sharp point or head, suffocation suddenly takes place. These are the appearances of *cynanchè*.

The symptoms attending *angina* are the opposite, viz. a collapse, gracility, paleness; the eyes are hollow and sunk; the fauces and throat contracted; the tonsils fall down much beyond what is usual; a deprivation of voice, and suffocation follow. From the evil being seated in the thorax, the source of respiration, the strangulation which takes place in this species, is much more violent than in the former. Those to whom

it quickly proves mortal, die the same day they are affected ; sometimes, too, before they have an opportunity of calling in a physician ; others, again, receive no benefit from his being called in, as they fall a victim to death before the physician can have recourse to art. But, should this species ever put on a milder form, all the parts become inflamed, and the inflammation is driven outwards, so that we see a *canis angina*, or *cynanchè* arising from an *angina*. It is likewise a favourable symptom when any large swelling, or remarkable erysipelas appears on the breast. A skilful physician draws the evil to the breast, either by cupping, or by applying mustard to the sternum, and parts about the maxillæ, produces an external ulceration, and contrives a discussion. By these means, in a very short space of time, the malady, in some cases, is drawn outwards, and, when discussed, it immediately recurs, and is driven in upon the internal parts.

The causes are very numerous : excessive cold and heat lay a foundation for the complaint ; but the former more frequently. It arises, likewise, from strokes ; from fish bones penetrating the tonsils ; cold drink ; inebriations ; repletion ; and from all the evils incident to respiration.

THE CURE OF ANGINA.

There are two species of *angina* : the one is attended with great heat, inflation of the tonsils, and swelling externally, besides the tongue, gullet, and all the adjacent parts are swelled ; the other consists in a collapse of those parts, and internal compression, attended with a greater degree of strangulation, so that the internal inflammation seems to reach as far as the heart. It is necessary to obviate this last as soon as possible, because it very soon proves mortal to the patients. If they proceed

from a surfeit or drinking, an injection should be given the same day, and it ought to be one of these two: either that used to evacuate the *faces*, or by which some of the moisture may be drawn down from the tonsils and thorax; but, of all others, there is none more simple or efficacious than decoctions of centaury and hyssop, and they are likewise very powerful in drawing down the phlegm. If they arise from a thin diet, it is necessary to cut a vein in the arm, and the aperture ought to be made large, in order that the blood may flow copiously and with ease. This will not be sufficient to allay the heat; but the strangulation will be mitigated, and all the symptoms diminished thereby. It will likewise be of no small service to bring the patient to a *deliquium animi*, provided it does not take place; for some, on being blooded, have died in this state. Considerable advantage has sometimes been derived from ligatures above the ankles and knees; but they are attended still with greater advantage if tied above the wrists toward the elbows, or above the elbows towards the shoulders. If the patient can swallow any thing easily, the wild cucumber ought to be given, with mulse and whey in such quantity as is sufficient to purge, for this is more powerful than others to patients labouring under the disease: spurge and mustard are likewise serviceable, especially as both evacuate and clear the belly. But should the swelling not subside, cut the veins under the tongue, after turning it towards the palate; and, if the blood flows easily and in great quantity, this is of more service than all other remedies. It is likewise proper that moist applications should be made to the inflamed parts: in the first place, such as are of an astringent quality, in order that the matter may be repelled; wherefore let sordid wool wet with the wine of hyssop, and oil expressed from unripe olives, be employed; besides, cataplasms are highly necessary, of a similar nature to these applications; such as are made from dates moistened

with wine and beaten with the leaves of roses, and, that the cataplasm may be of a viscid and softening quality, let barley flour be employed, or linseed with honey and oil, so that a mixture may be made of the whole together. But, if it comes to a suppuration, there is need of warm applications, as in the other species of *angina*; take, therefore, the flower of fennugreek, with manna and resin in a liquid state, and sprinkle the leaves of *poley*; use, likewise, warm fomentations, with sponges dipt in a decoction of laurel berries and hyssop: but the most powerful of all to promote suppuration, is that very fine part of the dung of pigeons or dogs, which is transmitted and pulverized through a sieve or piece of linen, and afterwards sprinkled on the cataplasm. Let the washes be mulse with lentils, or a decoction of hyssop, roses, dates, or of all together. The whole mouth must likewise be anointed, even as far as the innermost part of the *fauces*, with simples, such as the juice of mulberries, or apples macerated in water, or with a decoction of dates. The medicines should be composed of mulberries and honey, or wild rue and the juice of sumach, or the *diachelidonium*, by which is meant a preparation of swallows. But if crusts grow from the ulcers, the washes and gargles should be made from a decoction of hyssop in mulse, or of fat figs in water; and, besides these, starch may be added strained in mulse, or the cream of *ptisan* or *tragus*.—In the other *angina*, where a collapse of the parts takes place, every thing must be brought from the internal parts to the external, both moisture and heat, and all the flesh must be made to swell externally; wherefore let the irrigations be warm, with rue, anise, and a sprinkling of nitre, and the cataplasms the same as formerly. It is of service, too, to superadd cerate with nitre and mustard, in order to excite heat, because heat applied to external parts generally cures diseases of this kind; but a tumour in the neck is the consequence,

which, when much elevated externally, frees from inflammation of the lungs, but, when concealed internally, is very pernicious to those labouring under this disease. The persons who, from an apprehension of strangulation in *angina*, have cut the artery in order to promote the breathing with greater facility, do not seem to me to have trusted to experience in the matter ; for a greater heat and inflammation arise from the wound, which add to the strangulation and excite cough ; should they escape this danger, the lips of the wound do not coalesce, for both are cartilaginous and cannot be made to unite.

Molleson's Observations on Quackery.*

Quackery stalks unappalled “ with twenty ghastly murders on its head, to push us from our stools.” On the continent not uncommonly are we styled a nation of quacks and dupes ; and it is indeed a horrible national evil which “ has increased, is increasing, and ought to be diminished.” Not a public paper but teems with advertisements of most glaring lies, which dupe and entrap the unwary. On the face of such advertisements of quack and patent medicines, let every one acquainted with the human constitution say, if there is any one composition or remedy adapted to every case or instance of any one disease. He must answer in the negative. Let any man, indeed, of common sense, say, if it does not require a greater or smaller dose of medicine to take effect with him than others of his acquaintance, of similar age and sex. What good, in general, can be expected from such nostrums, in any disease or

* From Sinclair's Code of Health and Longevity..

set of diseases, not rarely completely mistaken, arising from different causes, in different constitutions, under different circumstances? None! but baneful mischief! the ruin and death of thousands. I know it; for often am I called to visit the victims of quackery; their constitutions broken down, their health for ever ruined, by the deadly influence of advertised drugs, disguised, overcharged, and misapplied; drugs the same that are daily exhibited by the judicious with the best effects, under due regulations, and the proper circumstances. Let the genuine patriot, the heaven-born friend of humanity, put the question to men conversant with the treatment of the sick, if this is not most strictly true; if the quack medicines, so impudently obtruded upon the public, are not either liable to the above objection, or, otherwise, calculated by their insignificance to amuse and delude infatuated individuals, till their disorders be past relief; to impoverish the public, and eventually to injure the revenue, that a few impostors may loll in their chariots, or revel in debauchery.

¹ But it becomes a question, if the regular physician be not, in a pecuniary view, rather interested in the continuance of quackery, which aggravates and multiplies disease, and brings them, as well as the quack, many a miserable patient. And it is to be remembered that the profession, however abused by the ignorant, give ample and frequent proofs, that they are deeply interested in the cause of suffering humanity. Assuredly, discreet legislative interference is necessary, and could not fail to produce the best effects, were any philanthropic member, by the requisite queries, to make himself master of the subject, with a view to bring it before the cognizance of parliament.

“ In the reign of James I, the council dispatched a warrant to the magistrates of London to take up reputed empirics, and bring them before the censors of the college, to find, by examination, how qualified they were to be entrusted either with the limbs or lives of his majesty’s subjects. Dr. Lamb, a most noted quack, and one who had got a large fortune by his pretended medicines, was at last obliged to confess he knew nothing of physic. Read and Woodhouse, two other contemporary quacks, were likewise brought to justice, which they acknowledged.” (*Bede.*)

Might not juries of physicians, of surgeons, apothecaries, and, perhaps, chemical druggists, be occasionally instituted, under the solemnity of an oath, to try suspected and illiterate pretenders, who never underwent any regular examination of their skill in these departments, towards inflicting, if necessary, prohibition, fine, banishment at least from the scene of their impositions and false celebrity, pillory, or other punishment; to examine critically nostrums, or quack medicines, &c.? Similar juries might be held, to appreciate the merits of inventions, discoveries, or improvements, that, in instances of great or national importance, liable to the alarming abuses felt in the common run of disguised patent medicines, deserved recommendation to parliament might be given, with a view to appropriate remuneration and disclosure. In other inventions, &c. not liable to such abuse, as useful artificial limbs, different surgical machinery and apparatus, such preparations as Coxwell’s concrete acid of lemons, &c. certificates might be given towards patents being granted in the usual way. To damp any litigious spirit, small allowances only should be made to the members of such medical courts; to defray which, fines, perquisites from candidates for premiums or patents, &c. might be founded.

But, as to patents already obtained by such of the advertising quacks as, relying more upon the faith of government than the justice of their pretensions, will not submit to scrutiny and the voice of the medical juries, let the following measures be adopted, as it is more to be desired than expected that their patents be paid off; let a tax upon their drugs, infinitely higher than at present, as well as upon their advertisement or puffs, be forthwith imposed, and progressively increased. This plan will in the end, as well as at the moment, augment the revenue before it can suppress them, so exorbitantly great, it is ascertained, are their profits; for there is scarcely one, if any, of the quack and patent medicines, but have been correctly analysed, and their ingredients found to consist of articles long in common use, and of comparatively trifling value. To obtain ample proof that these things are not spoken at random, it will, I doubt not, be only necessary to put the queries to that profession which has the best opportunity of knowing.

Surely, utility cannot be denied to some such methods as those proposed, which bid fair to discriminate between real and false pretension; to bring to detection and punishment the ignorant, specious, or daring impostor; suitably to reward the ornaments of the profession, and the benefactors of mankind; which propose to wipe the disgrace and reproach alluded to from our country; to protect property from pillage; population, and consequently the wealth of the empire, from decrease; directly, as well as indirectly, to assist rather than injure the revenue; while they may well exalt the honour and humanity of the nation, and finally remove weighty obstacles to the blessings of health and longevity.

Med. & Chir. Rev. No. 90.

*Account of a Contrivance to administer Cleanliness and Comfort
to the Bed-ridden, &c.**

The contrivance here alluded to, is the invention, it seems, of Mr. Henry Earle, the author's son, and certainly does credit to his discernment and humanity. In order to understand thoroughly its construction and uses, a reference to the plates would be perhaps necessary. The contrivance consists in a double bed ; the upper one has an opening in the sacking, in a suitable place, and of a proper size, to which a thin matress, blanket, or sheet are made to correspond, with a similar aperture : this, by a very simple piece of mechanism, may be elevated to a sufficient height for the nurse to introduce a proper receptacle between that and the fixed bed. The patient being relieved, the bed is gently laid down again upon the under one, a thin cushion being placed on the under bed to fill up the opening, and make the upper bed level.

The various cases in which a contrivance of this sort is much wanted, may be easily conceived. In compound fractures, and after the operation for aneurism has been performed ; in diseases of the knee, hip, and spine ; in fevers, when, from long continued and unvaried position, added to moisture and heat, excoriation and often extensive mortifications take place on the nates, hips, and lower part of the back ; in fistulas in perinæo ; in the gout and rheumatism, in which the least motion is often torture ; in the natural confluent small-pox ; in child-bearing, particularly in those cases where puerperal inflammation or danger of flooding requires a strict horizontal

* Letter containing some Observations on Fractures of the Lower Limbs, &c. By Sir James Earle, F. R. S. &c.

posture ; in cases of insanity, when coercion is necessary ; in sickness, weakness from age, or any other infirmity, which prevents persons from leaving their beds, or from being moved in them, these double beds, the author observes, will be found of admirable use and assistance.

Ibid. p. 160.

A short View of the Extent and Importance of Medical Jurisprudence, considered as a Branch of Education.*

Whatever aid the science of medicine can contribute towards the good of the state, and the execution of its laws, has been by the Germans denominated state medicine ; a new, but not improper, appellation, for that branch of knowledge which many writers have termed medical jurisprudence.

It comprehends both medical police and juridical medicine. The former consists of the medical precepts which may be of use to the legislature or to the magistracy. The latter is the aggregate of all the information afforded by the different branches of medicine, which is necessary for elucidating doubtful questions in courts of law.

Although there are some traces of juridical medicine in the Justinian code ; such as determining the real period of birth, with a view to prevent the imposition of spurious children ; it properly originated with the code of laws enacted by the emperor Charles V, under the name of *Constitutio criminalis*

* Copy of a Memorial which was presented by Dr. Duncan, senior, to the Patrons of the University of Edinburgh, in 1798, and which was recommended to the attention of his majesty's ministers, by the honourable H. Erskine, when lord advocate for Scotland, in 1806.

Carolina; in which it is ordained, that the opinions of physicians should be taken with regard to the danger of wounds, child-murder, poisoning, procured abortion, concealed pregnancy, &c. These directions, and the impossibility which was found of determining many questions by simply legal means, induced some legislators to enjoin, that all tribunals and judges should procure from sworn physicians, appointed to this office, their opinions concerning all the subjects to be mentioned hereafter.

Since that time, it has been treated systematically by many learned men; such as Fortunatus Fidelis, Zacchias, Alberti, Hebenstreit, Haller, Ludwig, Plenck, and lastly, in the most masterly manner, by Metzger. Numberless dissertations have been written on all its parts; and among those who have contributed to its advancement, we may reckon Ambrose Parry, Bohn, Buttner, Morgagni, Camper, and Gruner. Collections of cases, illustrating its principles, have been made by Amman, Daniel, Bucholz, Pyl, Scherf, and Metzger. These are only a few of the principal writers who have attended to this science; to enumerate more would be unnecessary.

From its very nature, it is evident how necessary a knowledge of this science must be to every medical practitioner, who is liable to be called upon to illustrate any question comprehended under it before a court of justice. On his answers the fate of the accused person must often depend; both judge and jury regulating their decision by his opinion. On the other hand, while he is delivering his sentiments, his own reputation is before the bar of the public. The acuteness of the gentlemen of the law is universally acknowledged; the versatility of their genius, and the quickness of their apprehension, are rendered almost inconceivable, by constant exercise. It is their

duty to make every possible exertion for the interest of their client, and they seldom leave unnoticed any inaccurate or contradictory evidence. How cautious must, then, a medical practitioner be, when examined before such men, when it is their duty to expose his errors, and to magnify his uncertainties, till his evidence seem contradictory and absurd? How often must he expose himself to such severe criticism, if he be not master of the subject on which he is giving evidence, and have not arranged his thoughts on it according to just principles? On the other hand, he may deserve and gain much credit by so public a display of judgment and professional knowledge.

Some acquaintance with this part of medical science must be useful at least, and sometimes necessary, to judges and lawyers. They will thus be enabled to estimate how much they may depend on the opinion of any physician, and will know how to direct their questions, so as to arrive at the truth, and avoid being misled by his partiality or favourite opinions. To the lawyer who conducts the defence of an accused person, in a criminal case, it is almost indispensable: without it, he cannot do justice to the cause of his client.

Before Criminal Courts, the questions which occur most generally are, respecting,

1. The cause of death, as ascertained from the examination of the body.
2. The sufficiency of the supposed cause to have produced death.
3. Probable event of wounds, contusions, &c.
4. The importance of the part injured.
5. Supposed child-murder; whether still-born or not.
6. Whether death accidental or intended.

7. Abortion ; its having occurred
8. Spontaneously, from habit ; accidentally, from external violence or passions of the mind ; or intentionally, from the introduction of a sharp instrument, use of certain drugs, &c.
9. Rape ; its being attempted or consummated ; recent or previous defloration.
10. The responsibility of the accused for his actions.

Before Civil Courts, the questions generally regard,

1. The state of the mind ; madness, melancholy, idiotism.
2. Pregnancy ; concealed, pretended.
3. Parturition ; concealed, pretended, retarded, premature.
4. The first-born of twins.
5. Diseases ; concealed, pretended, imputed.
6. Age and duration of life.

Before Consistorial Courts, the subjects investigated are,

1. Impotence ; general, relative, curable, incurable.
2. Sterility ; curable, relatively incurable, absolutely incurable.
3. Uncertainty of sex ; hermaphrodites.
4. Diseases preventing cohabitation ; venereal disease, leprosy, &c.

MEDICAL POLICE.

Of incomparably greater consequence, and more widely extended influence, is the second division of this subject : it regards not merely the welfare of individuals, but the prosperity

and security of nations. It is perhaps the most important branch of general police ; for its influence is not confined to those whom accidental circumstances bring within its sphere, but extends over the whole population of the state.

Many of its principles have been long acknowledged, and considered as necessary consequences of medical and political truths ; and some few of them have acquired the authority of laws. But it was reserved for the philanthropic *Frank* to collect the whole into one vast and beneficent system, and to separate it from juridical medicine ; in the old systems of which, it was neglected, or mentioned only in a few short paragraphs. His enlarged mind perceived at once, and fully vindicated its importance. The very name of medical police is now sufficient to attract the attention of legislators and of magistrates, and to make them desirous of becoming acquainted with its principles, and anxious to see them carried into execution. In fact, its influence is already visible in the countries where it is cultivated. If the principles of medical police were separated from the professional part of medicine, and communicated in a form generally intelligible, in what country have we reason to expect more beneficial effects from its influence than in this ? Where is the spirit of patriotism and benevolence so prevalent ? What nation is more generous in its public institutions ? Where does the individual sacrifice a part of his wealth so willingly for the benefit of the community ? It seems only necessary to prove that an undertaking will be of advantage to the state, to have it carried into instant execution. But, can medical knowledge be more usefully employed, than in pointing out the means of preserving or improving health ; of supplying healthy nourishment to the poor, especially in times of scarcity ; of opposing the introduction of contagious diseases, and of checking their progress ; of securing to the indi-

gent the advantages intended by their benefactors ; of rearing the orphan to be the support of the nation which has adopted him ; and of diminishing the horrors of confinement to the poor maniac and the criminal ? These good effects are not to be promoted so much by rigid laws, as by recommendation and example. Nor can it be seasonably objected to a system of medical police, that it is a pleasing dream, which flatters the imagination, but the execution of which is in reality impracticable. As well might we entirely throw aside the rules of humanity, because no one is able to observe them all ; or live without laws, because no existing code is unexceptionable.

Medical police may be defined—The application of the principles deduced from the different branches of medical knowledge, for the promotion, preservation, and restoration of general health.

The effects to be expected from it are the general welfare of the state, and increase of healthy population ; and are to be attained by means of public institutions, express laws, and popular instruction. Instructing the people, and convincing them of the propriety of certain precautions and attentions, in regard to their own and the general state of health, are necessary to secure the good effects of our public institutions and regulations ; to obtain respect and obedience in many things, to which no express law can be adapted ; and to induce them to forego what may be prejudicial to the safety of the community and of themselves.

Public medical institutions and laws must be adapted to the country for which they are intended. Many local circumstances, national character, habits of life, prevalent customs and professions, situation, climate, &c. make considerable va-

ieties necessary. And many institutions, many a law which would be highly beneficial to the public health, in some circumstances, would be useless, impracticable, and even hurtful, in others. These causes and their effects must, therefore, be particularly attended to.

The principal authors who have written on this subject are Alberti, Heister, Plaz, Frank, Huffy, Metzger, and Hebenstreit ; to whom we may add Howard and Rumford.

The subjects which it comprehends cannot be classed very regularly or systematically. Its views will be different, according to occasional and temporary causes ; and its interference may sometimes be advantageously extended beyond what may seem the strict limits of a branch of the medical profession.

Medical Police relates to

The situation of places of abode. Construction of houses.

Air. Means of counteracting its impurity—Its various impregnations.

Water. Its necessity and purity.

Food. Its various kinds—Comparative quantities of nourishment afforded by them—Cheaper kinds, which may be safely substituted in times of scarcity ; bread ;—animal food ;—butcher meat ;—fish ;—vegetables ;—vessels ;—cookery ; healthy ; æconomical.

Drink. Beer ; ale ; porter ; cyder ; spirituous liquors ; wine ; warm drinks ; adulterations of these liquors ; hurtful additions ; vessels.

Fire and light.

Clothing.

Cleanliness.

Professions. Manufacturers; mechanics; soldiers; sailors; men of letters.

Healthy propagation.

Pregnant and puerperal women.

New-born infants. Registers of births.

Physical education.

Prevention of accidents. From poison; hurtful; effluvia; maniacs; rabid animals.

Restoration of the apparently dead. Humane societies; care of the dying; danger of too early—too late burial; places of interment; manner of conducting it; bills of mortality.

Contagious and epidemic diseases. Plague; putrid-fever; dysentery; small-pox; inoculation; extirpation of them; leprosy; itch and pox; precautions to be taken to prevent their introduction, to diminish their violence, to destroy their cause, and to counteract their effects.

Management of public institutions; in which many people are collected under the care of the public.

Hospitals for the indigent: 1. Lying-in hospitals; 2. Foundling ditto; 3. Orphan ditto; 4. Hospitals for education; 5. Aged; 6. Blind; 7. Maimed.

Military hospitals: prisoners of war; lazarettoes; work-houses; prisons.

Hospitals for the sick; maniacs; convalescents; incurables.

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The above is an exact copy of Dr. Duncan's memorial in its original state. It was merely intended to give a general idea of the nature and extent of the proposed course of leg-

tures, but by no means to exhibit a complete view of the subject, or to enter upon the importance of its particular branches.

Medical jurisprudence and police also comprehend many interesting subjects besides those enumerated; particularly as suggested, among others, by the late lord advocate Erskine, the law of death-bed; for the most important decisions as to real estates, in Scotland, daily depend on the fact, whether persons conveying their estates to the prejudice of the heir at law, were or were not moribund at the time of executing the deed. It may be likewise mentioned, that scarcely a year passes in which parliament is not occupied with some branch of medical police. In the last session alone, inquiries into the state of vaccination, the quarantine laws, the county hospitals of Ireland, and the number of lunatics in England, were ordered. The subjects of these lectures are also daily attracting more and more the attention of medical philosophers, both in this empire and on the continent. Percival, Haygarth, Falconer, Bardsley, Pearson, and the patriotic president of the Board of Agriculture, have devoted part of their time to such investigations; and in France, since the preceding memoir was written, they have been systematically discussed in two very able works: "*Les Lois éclairées par les Sciences Physiques, par R. E. Foderé*;" and "*Médecine Légale et Police Médicale, de P. A. O. Mahon, Professeur de Médecine Légale, &c. à l'Ecole de Médecine de Paris*."

Med. & Chir. Rev. No. 90. p. 174.

Hydatids found in the Substance of the Tibia.

Hydatids have been observed to occupy the soft parts in various parts of the body ; as the womb, the spleen, the liver, the kidneys, &c. The existence of these bodies in the substance of bone has not probably been before observed. *

A man was lately admitted into the venereal hospital at Paris, under the care of M. *Cullerier*, who, in addition to some venereal symptoms, had a tumour on the upper and fore part of the leg, about three inches in diameter, and elevated two inches above the surface. This tumour was not painful, and was of a steatomatous consistence. The man dated its origin from a bruise two years before, occasioned by sliding through the steps of a ladder, and grazing the tibia in the fall. After having gone through the usual mercurial course for the venereal complaints, during which emollient cataplasms and hemlock plasters had been applied to the tumour without effect, M. *Cullerier* resolved to lay it open by caustic ; which was followed by a discharge of thick viscid matter, of the colour of lees of wine, and without smell. The bottom of the cavity was observed to be hard, rugous, and insensible ; which showed that the tibia was in a diseased state. The actual cautery was therefore applied repeatedly, and the charred part of the bone removed by a cutting instrument. A discharge of grumous pus in small quantity first took place, and this was soon followed by the issue of a number of distinct semi-spherical bodies, from three to four lines in diameter, which appeared to consist of a membrane of a dusky white hue, the thickness of the skin of a raisin, and half filled with a serous fluid. These bodies appeared to M. *Cullerier* to be hydatids that had been deprived of their life and undergone a change in their coats, by the effects

of the heat applied to the bone. Upon introducing a probe, a cavity was discovered in the bone, three inches long, and an inch and a half in diameter. During the following and several successive days, a considerable number of hydatids continued to be discharged; and among them one of a larger size, which was extracted by means of the forceps. It was of an oblong shape, and from its size, which was more than an inch in diameter, it appeared to be the parent of a number of smaller ones. In fact several were found within its cavity, in which was contained also a small quantity of serosity.

Med. & Chir. Rev. No. 90. p. xlviii.

On the Distomus Intersectus, a newly observed genus of Intestinal Worm. By M. Laennec, of the Paris School of Medicine.

Intestinal worms may be arranged into three families. The first comprehends such as are possessed of an intestinal canal, organs of generation, and the two sexes united in the same individual, or in different individuals. The body of these worms is commonly round, and more or less elongated. The second family includes those worms which have organs of generation, without apparent distinction of sex, and which do not appear to have an intestinal canal. It embraces the *tænia*, and some other genera, characterized by flat bodies. In the third class are ranked those worms which have neither an intestinal canal, nor organs of generation, although some of the species are reproduced in some measure as it were by slips, and in a manner similar to that of the *hydra* or *polypus*.

It is to the first of these families that the new genus described by M. Laennec belongs. The individual worm examined by

him was discharged by a lady who had laboured under diarrhœa for a fortnight, during which there was observed in her stools a considerable quantity of living *tricocephali*. The worm in question was half an inch long, rounded in shape, and about half a line in diameter. Along the whole of its inferior surface was perceived a sort of channel. Its body was divided into articulations like the *tænia*. One of its extremities was terminated by a brown point, which the microscope showed to be a large prepuce, on the lower side of which was perceptible, a penis very like that of the *trichurides tricocephali*. At the other extremity was easily perceived, by the aid of a simple lens, a head terminated by two horns or elongations, the points of which appeared clearly by the microscope to be perforated.

On examining this worm in the compound microscope, a knotty intestinal canal, like that of the other worms of the same class, was visible ; and a canal of generation at least as voluminous as the preceding.

A similar worm to the present, but three times as long, was observed some months before by M. Bayle, in a dead body, in the cavity of the peritonæum, it having, apparently, escaped from the intestines into the abdomen. M. Laennec gives this new genus the denomination of *Distomus*, from the shape and appearance of its head ; and he adds the epithet *intersectus*, as the only instance of the kind in the round worm. Its joints, though cylindrical, are in other respects analogous to those of the *tænia*. The *tænia articulis rotundis*, and the *tænia cylindracea*, of Bloch, and the *tænia serpentiformis non collaris*, of Goëze, resemble this species in the thickness of their joints.

Med. & Chir. Rev. No. 90. p. xlix.

French Prize Question.

The Rev. Mr. D. B. Warden, secretary to the American legation at Paris, has transmitted to the editors the following account of a French prize question.

By the orders of the French emperor, a prize of 12,000 francs is offered for the best dissertation on the *angina membranosa*, or *croup*, which lately proved fatal to the heir apparent of the French throne. According to the terms of the program, the nature of the disease must be explained, its origin and progress, its relations to other diseases, the mode of treatment, and the means of prevention. Foreign physicians are invited to the competition; and memoirs on the subject will be received till the 1st of January, 1809.

Med. Rep. No. 43.

Corrections and Additions to Davy's Experiments on the Alkalies.*

Some inaccuracies having occurred in the account of Mr. Davy's discovery of metalloidal substances in the fixed alkalies, the earliest opportunity is taken to correct them.

Mr. Davy stated that the basis of potash is volatile at a heat a little below redness, instead of at 100°, as asserted at first; and that the amalgam of the basis of potash and mercury dis-

* See p. [40] of the present volume.

solved gold, silver, and platina, without mentioning that a galvanic battery was used in aiding its operation.

His statement with regard to glass was, that the basis of potash decomposed it, by combining with its alkali, and by forming a red oxide, of a less degree of oxigenation than potash, which oxide was also procured by other means; and not that it was dissolved by the basis of potash in the same manner as metals. He also mentioned that the specific gravity of the basis of soda was to that of water as 9 to 10, instead of as 7 to 10.

Messrs. Pepys and Allen have repeated Mr. Davy's experiments with a large galvanic apparatus, consisting of 120 pairs of plates of 36 inches surface each, containing near seven hundred weight of metal. The solid caustic potash was used, moistened by the breath. The metalloid obtained was highly inflammable, swam in rectified naphtha, but was with difficulty separated from the potash, in which it was plentifully imbedded, after being exposed to the action of the galvanic battery. Water dropped on it made the particles explode like grains of gunpowder thrown into the fire.

The metalloid obtained from soda is not so inflammable as that from potash, and therefore can be more easily collected. A globule of it, about the size of a small tare, thrown on moistened paper, became instantly red hot.

Mr. Allen has also obtained both the metallbids, by 4 troughs of 50 pairs of plates, each of 16 inches surface.

Athenæum, March, 1808.

New Mode of Preparing Calomel.

We have received the following account of a new method of preparing calomel in the laboratory of Messrs. Howard and Co. at Plaistow. In their method of preparing *calomel*, the defective operation of levigating (or in fact of grinding that solid compound in a mill, as colours are ground) with water, is wholly omitted. They take the compound previously formed as usual, and by a sublimation, or distillation from a kind of crucible, laid horizontally in the fire, with its mouth projecting through the side of the furnace, and throw the calomel out in vapour, which is received on the surface of water, in a vessel closely fitted to the mouth of the crucible. By this simple contrivance, they obtain the product in a state of greater whiteness, and much greater attenuation than the most assiduous levigation could effect, yet without any further change in its medicinal qualities, than may reasonably be expected to be made *for the better*, by reducing it to a state of the most minute and uniform division. It becomes, in consequence, about $\frac{2}{3}$ lighter, or 3lb. occupy the same space as 5lb. of the levigated sort. The experience hitherto obtained of its manner of operating, justifies our expectation of its becoming a valuable addition to the pharmacopœia. They propose to distinguish it by adding the term *hydrosublimate* (which we think, though not quite classical, the most descriptive and appropriate) to the old name. The invention is due to Mr. Joseph Jewell, late foreman of the laboratory, and now a partner in the firm of Howard and Co. on whose account Mr. Allen, chemist, of Plough-court, Lombard-street, will supply any medical gentlemen who may apply, with specimens; which, however, Messrs. Howard and Co. will probably distribute

with a circular letter, addressed to the faculty of the metropolis.

Lond. Med. & Phys. Jour. No. 108.

Further Information on the same.

Mr. Joseph Jewel has invented a new process of producing calomel that shall always be in a state of an impalpable powder. This is effected by a particular manipulation in the last sublimation of the calomel, which he describes as follows: "I take calomel, or mercurius dulcis, broken into small pieces, and put it into an earthen crucible of the form of a long bowl, so as to fill about one half of it. I place the crucible on its side in a furnace provided with an opening, through which the mouth of the crucible projects about an inch. I then join to the mouth of the crucible an earthen-ware receiver, having an opening at its side, to receive the open end of the crucible. The receiver is about half filled with water. I lute the joint with a mixture of sand and pipe clay. The receiver has a cover, that has a side continued upwards for containing water, with a chimney or tube in it to allow the escape of steam from the water below. I then apply a fire round the crucible, sufficient to raise calomel in vapours, and force it through the mouth of the crucible into the receiver; where, by the water, while cold, or assisted by the steam when it becomes hot, it is instantly condensed into an impalpable powder, possessing all the qualities of calomel in its most perfect state. The calomel, when thus prepared, is purer, whiter, and more attenuated than that obtained by grinding. It is proper to wash the product over with water,

before it is dried, to rid it of the coarser particles which may form about the mouth of the crucible."

Lond. Med. & Phys. Jour. No. 110.

Observations on Domesticated Dormice.

Mr. John Gough, of Middleshaw, has published some interesting observations on domesticated dormice, which strongly tend to invalidate the received theory of torpidity. The account which he gives of his experiments is as follows: "Having procured two dormice, in January, 1792, which were caught in the woods but a few days before they came into my hands, I confined them in a cage, furnished with a thermometer, and placed in a chamber where no fire was kept. They were supplied regularly with water and food, consisting of hazel-nuts and biscuits. The weather in February being warm for the season at the beginning and end of the month, and frosty from the 16th to the 28th, I had an opportunity to observe that whenever the thermometer, which was attached to the cage, fell to 42°, the dormice became inactive, and remained apparently insensible as long as the heat of that part of the chamber did not exceed the above-mentioned temperature; but whenever the mercury reached 47° they became very susceptible of external impression, and awaked in the evenings, when they repaired to their stock of provisions, of which they consumed not a little. The same dry food being injudiciously continued through the summer, they grew sickly and died, so that I had not a second opportunity to attend to the economy of this couple during the cold season. About the middle of April, 1793, I obtained a third dormouse. Experience taught me to manage this in a manner more congenial to its constitu-

tion. In addition to the nuts and biscuits, it was constantly supplied with green hazel buds or raisins in spring, with ripe fruits in summer, and with apples and raisins in winter. This generous diet not only preserved the creature in health and high condition, but appeared to fortify it against the benumbing effects of cold, which it supported the following winter much better than the other couple had done; for it never slept more than forty-eight hours, and that but seldom, without visiting the cup which contained its provisions. I now began to suspect the torpidity of the dormouse, in a wild state, to be nothing but a custom imposed by necessity on a constitution which nature has intended to retain life during the cold season of winter, with but little food and an imperfect degree of respiration, as well as a languid, or, perhaps, partial action of the sanguiferous system. The uncommonly severe weather which ushered in the year 1795, confirmed this opinion apparently beyond dispute, for, notwithstanding the hard frost, it braved the cold with wonderful indifference. It awaked every evening, when it consumed in the course of the night a quantity of food amounting to one hundred, or one hundred and twenty grains, and frequently gnawed the ice which covered the water in the cage. It even undertook, in the coldest part of January, to repair its nest which happened to receive an injury, and accomplished the task in one night."

Lond. Med. & Phys. Jour. No. 110.

Observations on Quackery, &c.

The editor is happy to lay before the medical public a series of papers taken from the *Medical Observer* of London, on the subject of quack or empirical medicines. The importance of

checking the circulation of an evil of such magnitude, will be his excuse for occupying the pages of the Museum with observations on such of these articles as are most generally known in this country. The following "address to the public," by the editors of the work, will show its particular intentions.

ADDRESS TO THE PUBLIC.

This popular work is conducted on liberal and independent principles, with a view to enlighten the *public at large* on the subject of medicine. The welfare of society is its great aim, by exposing equally to *every* order of the community the various artifices practised upon them in what regards their health and the treatment of disease, as well from quackery as from regular practice. It contains either the specification or analysis of every patent and advertised medicine, and with such critical observations on its nature and composition as may enable every person to judge of its real merit for himself. It next enters into a detail of such abuses as fetter the improvement of medicine as a science, whether connected with obsolete privileges and authority, or arising from the manner of conducting the attendance on the sick as a nefarious matter of trade; and, lastly, it connects with these important objects an impartial examination of the medical literature of the present period, making the proper distinction between those publications which are directed to *real* professional improvement, and the instruction of the public, from such as are merely written for the purpose of an advertisement, and from the mere catch-penny traffic of the day. From this statement the present work has a claim to the patronage of every one who wishes to think or act for himself in what regards his own health, or that of his connections or friends.

No. I.

THE PECTORAL BALSAM OF HONEY*.

Sir John Hill, it is stated, was the inventor of this medicine, of which the following account is given in the bill of directions.

“ The Linnæus of Britain (for such was Sir John Hill emphatically called) recommends this excellent preparation, as the most salutary and effectual remedy for recent colds, obstinate coughs, sore throats, difficulty of breathing, asthmas, catarrhs, and all disorders of the breast and lungs. Congealed phlegm, acrimony in the fluids and obstructions in the glands, are gently and safely discharged by easy expectoration; wheezings and uneasiness in breathing are speedily removed by a few doses. It takes off the irritation, opens the thoracic duct, and heals the soreness of the breast and lungs. Thirty years experience has confirmed the recommendation in the immediate relief and gradual cure of coughs, colds, asthmas, and consumptions. It is the greatest preserver of the lungs ever discovered, and contains all the healing, softening, and soothing qualities of that salubrious extract of flowers, called honey, and the richest balsams of the eastern world; it is as restorative as asses' milk, and never disagrees with the stomach; a common cold yields to its benign influence in a few hours; and, when resorted to before the complaint is far advanced, all danger of consumption is certainly prevented.”

“Obstinate coughs, confirmed asthmas, and consumptive complaints, yield to the influence of this great medicine; in fact, it needs only a trial to convince the most incredulous of its unrivalled properties. Such are the faint outlines of the merits of

Sir *John Hill's balsam of honey*, the result of long researches into nature by that great *botanist*, who dedicated his life to the discovery of the true means of health in the vegetable kingdom."

"*Some general observations.*"

"If it be in the power of medicine to stop the ravages of that cruel disease the consumption, so fatal to numbers at a certain age in this country, this balsam will effect it."

"No particular *regimen* is required; only weak persons should take smaller doses. In all colds, small weak liquors, drank in plenty, are useful: suppers are to be avoided; and, in full habits, bleeding may be necessary; in consumptions, air, and exercise on horseback, must by no means be neglected."

Since the death of Lady Hill, it is asserted that Sir John Hill's recipes have devolved, by purchase, to a Mr. Shaw, vender of nostrums, in St. Paul's church-yard; who, by public advertisement, declares, that "Mr. Shaw being informed that a number of persons, *despicable in character*, and *abandoned in principles*, are making counterfeit preparations of Sir John Hill's medicine, he hereby offers a reward of fifty pounds, on conviction of any person *signing* or *putting* HIS NAME to any counterfeit preparation, purporting to be the preparation of Sir John or Lady Hill."

We perfectly agree with Mr. Shaw, that the person must be both despicable in character, and abandoned in principles, that would be capable of imitating or counterfeiting this medicine, or of advertising *tincture of tolu*, or *tincture of benzoin*, under the fictitious title of balsam of honey. Notwithstanding, how-

ever, Mr. Shaw's threats, we are sorry to observe, that there are *wretches* so depraved, as to be guilty of so serious a fraud, in consequence of which, these stimulating tinctures are sold in almost every market town in this country, and even sent abroad under the name of PECTORAL BALSAM of HONEY, which the credulous are induced to take from the supposition (as the title infers) that it really contains the properties of honey, and equally innocent.

We never heard Sir John Hill extolled as a botanist; and if he were the author of the directions, &c. which accompany this nostrum, we have no hesitation in pronouncing him ignorant of the properties of the medicine, and the nature of those complaints for the cure of which it is recommended. The expression that it is capable of opening the thoracic duct, betrays a want of anatomical knowledge. We are entirely unacquainted with Sir John Hill's character, but, if he were a regular physician, we are persuaded he would never have recommended such a medicine in those diseases, or have forfeited his character, by advertising a preparation which every person the least versed in chemistry must know, could not, by any chemical process whatever, be made from honey. In pharmacy or chemistry, there is no such preparation known as balsam of honey, nor is the spirit with which this pretended balsam is made, capable of extracting any of its medicinal properties. In coughs, arising from obstructed perspiration, in which there is always more or less a disposition to pleurisy or inflammation of the lungs, what must be the effect of this stimulating tincture? We can have no hesitation in saying, that it must be productive of the most serious, if not irreparable mischief. In incipient consumption, it must be equally dangerous, in hastening the formation of matter in the substance of the lungs, and of course the dissolution of the patient.

The observations we have already made on the effects of the balsam of liquorice, in pulmonic affections, apply more forcibly to this preparation. An improved balsam of honey is advertised by a Mr. Cundell, but in what this improvement consists we have not been able to discover. Every preparation sold under the title that we have had an opportunity of examining, is nothing more than tincture of tolu, or tincture of benzoin, which are as diametrically opposite in their properties to honey, as spirit of wine is to water.

It was our intention to have given some account of several nostrums, advertised as remedies for coughs, colds, and other complaints of the lungs, under the fictitious titles of balsam of horehound, essence of coltsfoot, essence of horehound, balsam of liverwort, &c. which we find so similar to each other, that to have entered into their merits separately, would be a mere repetition of those observations we have already made on the balsam of liquorice, balsam of lungwort and honey, to which we refer our readers.

Camphorated Water in Diseases of the Bladder.

A Spanish surgeon is in the habit of administering with success, in different disorders, especially those of the bladder, camphor dissolved in water. The mode which he employs for effecting the dissolution is, to put camphor, in powder, in a *Wolff's* apparatus, and to impregnate the water with carbonic acid gas. As the water becomes saturated with the gas, it dissolves the camphor, and retains it so dissolved as long as the water remains acidulated.

Virgula Divinatoria.

The *virgula divinatoria* is in high repute amongst the Welsh miners ; what sympathy there is between a vein of coal or lead ore, and a piece of hazel, it would be difficult to say, but constant recourse is had to this mode of detecting mineral strata. Though made of hazel it is no common instrument ; it must be a fork cut in a planetary hour ; for lead, on Saturn's day and hour, because Saturn is the *significant of lead* ; Jupiter must be in conjunction, sextile, or trine, and the better if any reception happen ; but if it happen at square or opposition the whole is marred ; thus cut, it is laid by for use in a heap of wheat or barley : this is to be held by the forks with both hands, and carried over the land supposed to contain the ore ; over all the barren spots it appears unaffected, but no sooner does it impend over a vein than it presses strong down, and a similar attraction is discovered as between iron and the magnet. You will recognise in this the impious wands of the heathen, and smile at the continuance of the imposture ; but how much are men the slaves of nominal discrimination ? How often, while they condemn one absurdity, are they the dupes of others still more absurd ? A few years since a similar rod was used in France, and obtained credit, for discovering *springs of water* ; and is it not in the memory of every one, when numbers experienced enchantment, both in France and England, *without any divining rod at all* ? and believed themselves to be affected by an invisible agent which the enchanter called animal magnetism ? But it required too much exertion of the imagination long to expect *effects without any visible causes*. Those who wish to dupe the public have been under the necessity of changing their *invisible* plan ; and we are now furnished with divining rods again, under the pompous philosophic name of *metallic tractors*.

There are persons who pretend to cure certain disorders, especially *erysipelas*, by breathing on the parts affected, and laving it with fasting spittle ; but their qualifications are special and rare ; their ancestors must have eaten of the flesh of an eagle, and they have certain incantations delivered down to them by tradition.

Evans's Tour in North Wales, p. 404.

A new Varnish.

M. Bompoix, chief apothecary to the French military hospital at Genoa, lately sent to M. Parmentier at Paris some coffee cups of uncommon lightness and beauty. They were glazed with a varnish which is held in great estimation in that country, and the composition of which is kept a profound secret. M. Bompoix, at the earnest request of M. Parmentier, obtained a knowledge of this secret from the artificer at the manufactory, through the medium of one of his pupils, and he has succeeded in making a varnish in every respect equal to that in question. It consists of linseed oil, lb. $1\frac{1}{2}$; amber, lb. 1 ; litharge in powder, minium in powder, and ceruse in powder, each 5 oz. The linseed oil must be boiled in an unglazed earthen vessel, with the litharge, minium, and ceruse inclosed in a linen bag, suspended in it during this process, so as not to come in contact with the bottom of the vessel ; when the oil begins to turn brown, the bag must be taken out, a clove of garlic freed from the skin thrown into the vessel, and the boiling continued. When the garlic is dried away, another and another must be put in, to the amount of six or seven. In the mean time, the amber should be melted in another unglazed vessel, in the manner hereafter described ; and when the oil is sufficiently boiled,

the fused amber must be poured into it. In order to soften the amber, and assist its fusion, two ounces of linseed oil must be added to it. When the amber is wholly melted, it must be added to the linseed oil prepared as above, and the whole boiled for about the space of two minutes ; after which the fluid must be strained through a coarse cloth ; and, when cold, put into a bottle well corked to prevent it from drying. The amber ought to be fused over a very brisk fire. The piece intended to be varnished must be previously well polished, and the varnish applied in the following manner : the varnish must be mixed with a small quantity of turpentine, and a little lamp black ; after which one coat is to be laid on the piece by means of a hair-pencil ; when this is dry, another must be laid on in the same manner, and the process repeated until four coats have been applied, taking care that each be completely dry before the application of the next, after which the piece must be put into a stove, or oven, and, when the drying is completed, polished with pumice and Tripoli powder. The cups ought to be made of hazel, alder, or cherry tree, which are preferable to other woods for this purpose, from their being porous when perfectly dry, and not liable to warp. The cups, or other articles must be dried in an oven, and finely polished, previous to the application of the varnish. A red ground may be given to the articles by mixing a little minium, or rather cinnabar, with the varnish ; or any other colour may be mixed with it as may best suit the fancy of the operator.

Month. Rev. Dec. 1806.

STATEMENT OF DEATHS.

WITH THE DISEASES AND AGES.

In the City and Liberties of Philadelphia, from the 2d of January, 1807, to the 2d of January, 1808.

DISEASES.	Ages unknown.													Total.
	Under 2 years.	From 2 to 5.	From 5 to 10.	From 10 to 20.	From 20 to 30.	From 30 to 40.	From 40 to 50.	From 50 to 60.	From 60 to 70.	From 70 to 80.	From 80 to 90.	From 90 to 100.	From 100 to 110.	
Abscess	2	0	0	1	0	2	2	2	0	0	0	0	3	12
Apoplexy	0	0	0	0	3	3	8	5	2	4	0	0	5	30
Aphthæ or thrush	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Asthma	2	0	0	1	1	3	1	1	3	2	1	1	0	16
Atrophy	17	1	0	1	0	1	1	1	1	1	1	0	0	25
Burns	3	1	0	0	0	0	0	1	0	0	0	0	1	6
Cachexy	0	1	0	1	0	0	1	0	0	0	0	0	0	3
Cancer	0	1	0	0	0	1	2	1	1	1	1	0	1	9
Casualties	3	1	0	0	0	1	0	1	2	1	0	0	2	11
Catarrh	1	0	0	0	0	0	2	1	1	0	0	1	1	7
Cholera	181	2	0	0	0	2	2	0	0	0	0	0	2	189
Cholic	2	0	0	0	0	1	4	7	2	3	0	0	2	21
Compression of brain	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Consumption of lungs	6	3	6	21	51	86	54	23	17	6	2	0	31	306
Convulsions	91	5	2	0	6	9	2	2	0	1	1	0	8	127
Contusion	0	0	1	0	1	0	0	0	0	0	1	0	0	3
Curved spine	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Debility	1	0	0	0	0	0	0	3	1	0	0	0	0	5
Decay	15	4	5	3	5	6	14	8	9	5	4	2	4	84
Diabetes	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Diarrhœa	21	4	3	0	2	8	3	9	7	5	5	1	7	75
Dropsy	1	2	1	2	5	10	6	7	5	4	5	0	4	54
Dropsy of the brain	27	13	2	2	3	0	0	1	0	0	0	0	0	48
Dropsy in the chest	1	1	1	1	2	2	2	3	1	4	1	0	1	20
Drowned	0	0	4	2	0	1	3	0	0	0	0	0	16	26
Dislocations	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Drunkenness	0	0	0	0	0	3	4	0	0	1	0	0	6	14
Dysentery	26	9	6	4	4	2	6	3	1	1	1	1	6	70
Dyspepsia	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Epilepsy	1	0	0	1	0	1	0	0	0	0	0	0	2	5
Erysipelas	2	0	0	0	0	1	0	0	0	0	0	0	0	3
Fever	6	3	3	5	2	6	2	3	3	2	1	0	0	36
Fever, intermittent	2	1	0	1	0	0	0	0	0	0	0	0	0	4
— remittent	2	1	1	2	2	2	4	2	1	1	0	0	2	20
— bilious	1	0	1	0	4	1	2	0	1	1	0	0	0	11
— malig. bilious	0	0	0	1	1	0	0	0	0	0	0	0	1	3
— hectic	1	0	0	1	1	1	0	0	0	0	0	0	0	4
— nervous	0	0	1	3	1	1	2	2	0	0	0	0	0	10
— putrid	1	0	0	0	0	0	0	0	0	0	0	0	0	1
— scarlet	1	0	0	0	0	1	0	0	0	0	0	0	0	2
— inflammatory	0	0	0	0	1	1	0	2	1	0	0	0	0	5
— puerperal	0	0	0	0	4	2	0	0	0	0	0	0	1	7

CONTINUED.

DISEASES.	Under 2 years.	From 2 to 5.	From 5 to 10.	From 10 to 20.	From 20 to 30.	From 30 to 40.	From 40 to 50.	From 50 to 60.	From 60 to 70.	From 70 to 80.	From 80 to 90.	From 90 to 100.	From 100 to 110.	Ages unknown.	Total.
Fever, typhus	0	0	3	3	8	8	7	0	1	0	0	0	0	4	34
Fracture	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Fungus hæmatodes	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Gangrene	3	2	0	2	2	1	3	1	2	1	1	0	0	2	20
Gout	0	0	0	0	0	1	0	2	2	0	0	0	0	1	6
Gravel	0	0	0	0	0	0	0	0	1	0	1	1	0	0	3
Hernia	0	0	0	0	0	1	1	2	2	0	0	0	0	1	7
Hives or croup	41	9	4	0	1	0	0	0	0	0	0	0	0	0	55
Hysteria	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2
Hooping-cough	15	1	1	0	0	0	0	0	0	0	0	0	0	0	17
Hæmorrhage	0	0	0	2	1	1	2	1	0	0	0	0	0	0	7
Inflam. of the brain	2	1	1	0	0	3	1	0	0	0	0	0	0	4	12
lungs	14	2	0	0	7	8	6	2	2	1	0	0	0	6	48
liver	1	0	0	0	1	0	2	2	0	0	0	0	0	2	9
breast	2	1	0	1	0	0	0	1	0	0	0	0	0	2	7
stomach	1	1	0	2	0	0	0	1	1	0	0	0	0	0	6
bowels	10	3	2	3	1	2	0	0	0	1	0	0	0	1	23
bladder	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
Influenza	3	0	0	2	1	3	3	6	3	4	3	0	0	2	30
Insanity	0	0	0	0	6	8	3	8	2	0	0	0	0	4	31
Lethargy	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Locked jaw	1	1	1	3	0	1	1	0	0	0	0	0	0	1	9
Jaundice	0	0	0	0	0	1	0	1	0	0	0	0	0	1	3
Murdered	1	0	0	0	0	0	0	1	1	0	0	0	0	0	3
Old age	0	0	0	0	0	0	0	0	1	22	3	2	4	5	65
Palsy	0	0	0	0	0	0	2	9	3	1	0	0	0	3	18
Parturition	0	0	0	0	2	7	0	0	0	0	0	0	0	3	12
Pleurisy	2	0	2	0	2	9	7	5	3	1	0	0	0	7	38
Prolapsus uteri	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Rheumatism	0	0	1	0	0	0	0	0	0	1	0	0	0	2	4
Scirrhus of the liver	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Scrophula	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3
Small-pox, natural	7	6	2	0	6	1	0	0	0	0	0	0	0	8	30
inoculated	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Sore throat	2	2	1	0	0	0	0	0	0	0	0	0	0	2	7
Still-born	84	0	0	0	0	0	0	0	0	0	0	0	0	0	84
Sudden	3	1	1	1	0	4	4	3	2	1	0	0	0	11	31
Suicide	0	0	0	1	1	5	0	1	0	0	0	0	0	1	9
Stone	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Suffocation	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Syphilis	0	0	0	1	5	5	1	1	1	0	0	0	0	1	15
Teething	0	10	0	0	0	0	0	0	0	0	0	0	0	0	10
Tic douloureux	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Tumors	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Ulcers	0	2	0	0	0	1	0	2	0	0	0	0	0	0	5
Worms	0	24	9	4	0	0	0	0	0	0	0	0	0	0	37
Diseases unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	51	51
Total	614	121	65	79	144	236	172	139	88	79	60	11	4	233	2045

DEATHS IN EACH MONTH

OF THE FOREGOING PERIOD.

					Adults.	Children.	Total.
January	-	-	-	-	92	58	150
February	-	-	-	-	73	45	118
March	-	-	-	-	109	45	154
April	-	-	-	-	111	46	157
May	-	-	-	-	90	43	133
June	-	-	-	-	91	68	159
July	-	-	-	-	101	136	237
August	-	-	-	-	117	151	268
September	-	-	-	-	140	97	237
October	-	-	-	-	108	54	162
November	-	-	-	-	101	54	155
December	-	-	-	-	71	44	115
Total	-	-	-	-	1204	841	2045

The foregoing statements were drawn up, with as much accuracy as possible, from the returns given to the Board of Health, from physicians and others.

By order of the Board of Health,
WILLIAM NESBITT, *Clerk.*

It is presumed that the accompanying engraving of the facsimiles of several of our well known medical forefathers, will not be unacceptable. The rank they held in their respective countries, and the benefit we have derived from their labours, cannot but render any memorial of them agreeable to those who properly appreciate their merits. For sketches of their lives, see the *Encyclopædia Britannica*.

If the following statement is correct, it certainly deserves every extension which medical publications can afford; if not, it is incumbent on the person in question to exculpate himself from the odium, which such a report is calculated to produce. E.

The *Wilmington Museum* of the 16th inst. contains a report relative to the conduct of a Dr. *John Hamm*, of Dover (D.), which contains a detailed account of his endeavours, contrary to the express wishes of a meeting of the citizens of the town, to introduce the *small-pox*. In a part of the report it is said that Dr. Hamm declared that he had *vaccinated* an apprentice boy of Mr. Harris's, but told Mr. Harris "to say nothing about it, and there would soon be *small-pox* enough in Dover." "Throughout the whole of this business," say the committee, "Dr. Hamm seems to have acted as an enemy to his species, regardless of consequences." The committee conclude their report by offering "as their opinion, and as an opinion to be considered by this meeting, that John Hamm ought to be publicly stigmatized as a man, who, like the murderer, has a heart devoid of social duty, and fatally bent on mischief. On motion, said report was unanimously adopted."

JOSEPH HARPER, *Chairman*.

Attest, CÆSAR R. WILSON, *Secretary*.

We publish the above in consequence of its being stated in the report, that Dr. Hamm intends to move from Dover to some other part of the United States.

Democratic Press, April 19.

Home, on a more Direct Course to the Kidneys.

Dr. Pinkard, of London, informs Dr. Rush, of this city, in a letter dated February 27th, that "the medical world is much interested respecting some speculative inquiries and experiments of Mr. Home, to ascertain a more direct course of fluids to the kidneys, than by the common round of the arterial circulation. It is suggested, that the spleen may probably be an organ which is subservient to this purpose, and it is more than hinted, that immediately connecting vessels may be discovered between the stomach and that viscus."

☞ According to custom, the late numbers of the London Medical and Physical Journal are occupied with several cases, &c. from the Medical Museum, without any acknowledgment. I see that answers and observations are coming in to the editors, from correspondents, ignorant of the sources from whence the papers they notice are derived, and thereby adding, unintentionally, to the very illiberal conduct of the editors, whose sole wish, I am perfectly persuaded, is to have it supposed that they have an extensive correspondence in the United States.

E.

☞ The editor once more requests the favour of gentlemen forwarding communications for the Museum to attend to the payment of the postage; as he is determined, after this notice, to publish none, when such omission occurs.

MEDICAL AND PHILOSOPHICAL REGISTER.

VOL. V.....No. III.

FOREIGN AND DOMESTIC.

Observations on Quackery, &c. continued from the Medical Observer.

NO. II.

“ By the King’s Patent.

“ WHITEHEAD’S ESSENCE OF MUSTARD,

“ A safe and effectual remedy for rheumatisms, gout, rheumatic gout, sciatica, lumbago, numbness, palsy, flatulencies, head-ach, pains of the stomach, sprains, bruises, chilblains, &c. Prepared only, and sold wholesale and retail, by the inventor, R. JOHNSON, apothecary, Greek-street.”

“ IT is universally acknowledged (observes the proprietor), that mustard is a plant possessed of the most powerful

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virtues; its reputation as a medicine for the rheumatism, gout, lumbago, and palsy, has been established for ages. Amidst an innumerable variety of remedies for these inveterate diseases, which have successively risen and fallen in public estimation, mustard has successfully stood the test of experience. But the faculty have ever observed, and the afflicted feelingly regretted, that the use of this invaluable medicine is, in all cases, attended with disagreeable circumstances." He further states, that "mustard is found, upon analysis, to be *clogged with so many impurities*, and its medicinal virtues so *widely diffused*, and *closely* united with the gross parts, that persons afflicted with the gout, rheumatism, &c. cannot take a dose *sufficiently* large, without nauseating the stomach, and, if externally applied, it irritates and inflames in a most violent manner; were it not for these causes, it is highly probable other remedies would have been unnecessary !!!"

"To render, therefore, so excellent a medicine universally beneficial, every inconvenience is entirely removed in WHITE-HEAD'S ESSENCE OF MUSTARD. It is prepared in PILLS, and in a FLUID STATE, for the convenience of *external* and *internal* use, and is so perfectly innocent, that it may be used by persons of every age."

For this invaluable discovery, the proprietor, it appears, has obtained a PATENT, but on what grounds it could have been solicited or granted by the legislature, we cannot surmise. As this nostrum was first invented by Mr. Johnson, and still continued to be made by him, why it should be named White-head's, appears to us somewhat extraordinary. It seems to indicate that Mr. Johnson was at first ashamed to have his name affixed to it, from the consciousness of its neither deserving the title or character he has given it.

We do not find, on examination, that this valuable preparation is, from its composition, entitled to be termed an essence from mustard. It does not appear to us to be any more than diluted *spirit of turpentine*, to which we conceive Mr. Johnson's encomiums on the virtues of mustard are not strictly applicable, nor can we agree with him in pronouncing it a "*safe and effectual*" remedy for those complaints, for the cure of which he so warmly, but not disinterestedly recommends it. The expressed oil of mustard may have been employed to dilute the spirit of turpentine; but this oil does not contain the aromatic quality of the mustard in which its medicinal virtues reside. The oil is insipid, and by the manufacturers of the flour of mustard is sold as cheap as common linseed oil.

This nostrum is coloured, probably, by some mustard seed being infused in it, but the menstruum is not capable of extracting its virtues in a degree to entitle it to the term of essence of mustard. A liniment with spirit of turpentine and camphor, was much employed by Dr. Lewen, in Liverpool; the formula for which is published in the *Pharmacopœia Chirurgica*, with an observation by the author of that very useful work, that it has been found to resemble, very CLOSELY, "Whitehead's Essence of Mustard." The taste of the turpentine is so very predominant, that we cannot discover the least flavour of camphor.

The author of a late spirited and well-written pamphlet* on quackery states, that it was his intention to have given the composition of the patent medicines, but, on showing them to

* This work is entitled an *Essay on Quackery*, and the dreadful consequences arising from taking advertised medicines, illustrated with remarks on the fatal effects, with an account of a recent death, occasioned by a quack medicine, and observations on the coroner's inquest taken on the body, &c.

an intelligent gentleman, he was assured that those taken from specifications in the patent-office were very erroneous, although given in with the *solemnity of an oath*; he therefore thought it more proper to abridge the number of the recipes, than deceive the public. His letter on the subject states as follows :

“ Your recipes on specifications in the patent-office will assuredly err, for, although I believe each is given in with the *solemnity of an oath*, it is doubtful whether any one be true. No action for infringement will therefore lie ; such, if instituted, must be on another principle, not on the patent, viz. for counterfeiting the proprietor’s name, his bills, &c. and for selling a preparation as his, which is not so. The purport of a patent is, therefore, *merely parade!*” He further asserts, “ that eminent and experienced chemists have proved the *impossibility* of combining the ingredients named in some of the specifications, and if they could, they were *diametrically opposite* to the purpose intended.”

Dr. Walter Keighley, in his popular treatise on midwifery, and the management and diseases of children, observes, “ the inventors of good medicines are, no doubt, entitled to compensation, but this is very improperly given by a *patent*, whereby the quack is enabled to conceal the composition of his nostrum (for no patient ever thinks to examine the specification of his patent), and what is more dangerous, to put it indiscriminately into the hands of the most ignorant, in every stage of a disease, or indeed for the cure of half the diseases attending the human frame.” Page 352.

With respect to the composition of this pretended essence of mustard, we cannot discover the least pretension the proprietor has to a patent. Spirit of turpentine has been employed,

both externally and internally, in cases of chronic rheumatism, for upwards of a century ; Mr. Johnson can, therefore, have no certain claim to its first recommendation in those cases. We can see but very little similiarity between the properties of mustard and turpentine, and in some cases where the former may be proper, the latter may prove highly injurious. Turpentine is likewise a strong diuretic, a property which cannot be attributed to mustard.

As a remedy for chilblains, diluted spirit of turpentine has been very commonly and successfully employed ; but, in such cases, the stimulus of the mustard would be more likely to increase the inflammation, and thus produce considerable mischief: and we are persuaded, that if Mr. Johnson's nostrum had been a genuine essence of mustard, he would not have recommended it as a proper application for chilblains.

As an internal remedy, we conceive there is a very great difference between the stimulating properties of mustard and turpentine, in evidence of which, we shall quote the opinion of Dr. Reece*, whose popular works prove him to be a practitioner well versed in chemistry, and much devoted to the good of his country. This author observes, " diluted spirit of turpentine has been puffed off in the daily prints, under the name of *essence of mustard*. The stimulus of the mustard is of a peculiar nature, and very different to turpentine. If, therefore, a person that was desired to take the mustard seed by a physician, and he preferred the *essence of mustard*, from the assurance that it contained, in a pure and concentrated state, all the virtues of the mustard, which is stated to be the case, the most serious consequences might ensue, and, in a court of justice, a person so injured might recover heavy damages."

* Domestic Medical Guide. Page 366.

In treating on rheumatism, this author observes, "it is often extremely difficult to distinguish rheumatic pains from those produced by deep seated inflammation, and from such mistakes the most serious consequences often arise, particularly when situated in the loins or hip joint: the stimulating applications, as electricity, &c. employed for the cure of rheumatism, increasing the inflammation, and hastening the suppuration, which generally terminates fatally. Such errors have occurred even in regular practice, and, through the imprudent use of *quack medicines*, such terminations are not unfrequent. That formidable disease, the lumbar abscess, begins with pains in the loins similar to lumbago, and almost the only chance of recovery the patient has, is the prevention of suppuration, which the continued use of those stimulating remedies must destroy every hope of effecting." Every person that is acquainted with hospital practice must know the truth of these assertions.

The observations we have already made on the internal use of the *concentrated essence of ginger*, in cases of gout, rheumatism, and flatulency, equally apply to these medicines, and we are persuaded that no medical man in his senses would approve of its topical application to gout in the extremities; he must have better authority than Mr. Johnson's testimony to justify so bold a practice.

For the "*essence of mustard pill*," it does not appear that the proprietor has yet obtained a patent, and we can venture to state, that neither Mr. Johnson or Mr. Whitehead will ever be able to concentrate the medicinal virtues of the mustard, so that it may in proper doses be exhibited in a pilular form. After observing that Mr. Johnson, *alias* Mr. Whitehead, is the propri-

ctor of the "essence of horehound*," we judge any observations on his abilities as a chemist, as well as his medicines, equally superfluous. We conclude, therefore, our animadversions on these medicines, by recommending them to the attention of the College of Physicians, whose duty it unquestionably is to remonstrate with government on the impropriety of granting patents for medicines whose indiscriminate use must be attended with serious consequences, and particularly for remedies which can in no respect be entitled to such protection.

[To be continued.]

Analysis of Mineral Waters.

The following extract from Henry's Chemistry, on the subject of mineral waters, is introduced in conformity to the wishes of several gentlemen, in hopes the information contained will enable those physicians, in the vicinity of the various mineral springs throughout the United States, to make a complete analysis of them, for the benefit of the medical public. I shall not, therefore, apologize for the length of the extract, as it would have been improper to divide it. I shall be happy to have it in my power to give publicity to any remarks and observations connected with this subject. E.

The complete and accurate analysis of mineral waters, and of mineral bodies in general, is one of the most difficult subjects

* A person possessing a slight knowledge of chemistry, and the properties of the horehound, must know that there can be no such preparation extracted from this herb as an ESSENCE, or that its virtues can be so concentrated with a spirituous menstruum, that a tea-spoon should contain any thing like a dose. He may as well advertise an essence of cabbage.

of chemical manipulation, and requires a very extensive acquaintance with the properties and habitudes of a numerous class of substances. Long and attentive study of the science is therefore essential to qualify any one for undertaking exact and minute determinations of the proportion of the component parts of bodies. Such minuteness, however, is scarcely ever required in the experiments that are subservient to the ordinary purposes of life ; a general knowledge of the composition of bodies being sufficient to assist in directing the most useful applications of them. I shall not attempt, therefore, to lay down rules for accurate analysis, but shall only describe such experiments as are suited to afford an insight into the kind, but not to decide the exact proportion of the constituent principles of natural waters, and of mineral substances in general.

Before proceeding, however, to the analysis of a water, it is proper to inquire into its natural history, and to examine attentively its physical characters. The nature of the strata, in the neighbourhood of the spring, will often furnish useful suggestions respecting the contents of the water ; the period of the year should be stated at which the analysis was performed ; and whether after a rainy or dry season. The temperature of the water must be carefully observed, as it issues from the spring ; and the quantity inquired into, which it yields in a given time. The sensible qualities of taste, smell, degree of transparency, &c. are also best ascertained at the fountain head. The specific gravity of the water may be found by weighing a bottle, which is capable of containing a known weight of distilled water, at a certain temperature, filled with the water under examination, at the same temperature. It is proper, also, to examine, on the spot, the channel through which the water has flowed ; to collect any deposit that may have been formed ; and to investigate its nature.

The effects of heat on the water may be next tried. Many waters lose their transparency when their temperature is raised, and let fall a considerable deposit. The quality of this may, in some degree, be conjectured from its appearance. If its colour be brownish-yellow, it consists, either wholly or chiefly, of oxyde of iron; if white, or nearly white, it is composed principally of the earthy carbonates. A mineral water, containing iron, deposits that metal also, when exposed to the atmosphere; and a thin pellicle forms on its surface, whether stagnant in a natural reservoir, or collected in a separate vessel. By this exposure, iron may be sometimes discovered in a water, though not easily detected at first; because it becomes further oxydized, and more sensible to the action of tests. Sulphuretted hydrogenous waters exhibit a sediment, even when preserved in a well-closed vial; the hydrogen quitting the sulphur, which settles in the form of a white powder.

§ 1. *Examination of Mineral Waters by Re-agents.*

Water is never presented by nature in a state of complete purity. Even when collected as it descends in the form of rain, chemical tests detect in it a minute proportion of foreign ingredients. And when it has been absorbed by the earth, has traversed its different strata, and is returned to us by springs, it is found to have acquired various impregnations. The readiest method of judging of the contents of natural waters, is by applying what are termed tests, or re-agents; *i. e.* substances which, on being added to a water, exhibit, by the phenomena they produce, the nature of the saline, or other ingredients. For example, if, on adding infusion of litmus to any water, its colour is changed to red, we infer, that the water contains an uncombined acid: if this change ensues, even after the water

has been boiled, we judge that the acid is a fixed, and not a volatile one: and if, on adding the muriated barytes, a precipitate falls down, we safely conclude, that the peculiar acid, present in the water, is, either entirely or in part, the sulphuric acid. I shall first enumerate the tests generally employed in examining waters, and describe their application; and, afterwards, indicate by what particular tests the substances, generally found in waters, may be detected.

In many instances, however, a mineral water may contain a saline, or other ingredient, but in such small quantity as to escape discovery by tests. It is, therefore, advisable to apply the tests of fixed substances to the water, after reducing its bulk one-half, or more, by evaporation, as well as in its natural state.

The use of tests, or re-agents, has been employed by Mr. Kirwan to ascertain, by a careful examination of the precipitate, not only the *kind*, but the *quantity*, of the ingredients of mineral waters. This will be best understood from an example. It is an established fact, that 100 parts of crystallized muriate of soda, when completely decomposed by nitrate of silver, yield, as nearly as possible, 235 of precipitate. From the weight of the precipitate, separated by nitrate of silver from a given quantity of any water, it is therefore easy, when no other muriatic salt is present, to infer what quantity of muriate of soda was contained in the water; since every hundred grains of muriated silver indicate, pretty accurately, $42\frac{1}{2}$ of crystallized common salt. The same mode of estimation may be applied in various other instances; and the rule for each individual case is given by Mr. Kirwan, in part ii, chap. 2, of his "Essay on the Analysis of Mineral Waters."

In most instances, also, it will be found stated in the following description of the use of the various re-agents.

I. Infusion of Litmus, Syrup of Violets, &c.

The infusion of litmus is prepared by steeping this substance, first bruised in a mortar, and tied up in a thin rag, in distilled water, which extracts its blue colour.

If the colour of the infusion tends too much to purple, it may be amended by a drop or two of solution of pure ammonia; but of this no more must be added than is barely sufficient, lest the delicacy of the test should be impaired.

The syrup of violets is not easily obtained pure. The genuine syrup may be distinguished from the spurious, by a solution of corrosive sublimate, which changes the former to green, while it reddens the latter. When it can be procured genuine, it is an excellent test of acids, and may be employed in the same manner as the infusion of litmus.

Paper stained with the juice of the March violet[†], or with that of the scrapings of radishes, answers a similar purpose. In staining paper for the purposes of a test, it must be used unsized; or, if sized, it must previously be well washed with warm water; because the alum, which enters into the composition of the size, will otherwise change the vegetable colour to red.

In the *Philosophical Magazine*, vol. 1, p. 180, may be found some recipes for other test liquors, invented by Mr. Watt.

Infusion of litmus is a test of most uncombined acids.

1. If the infusion redden the unboiled, but not the boiled water, under examination; or if the red colour, occasioned by adding the infusion to a recent water, return to blue, on boiling, we may infer, that the acid is a volatile one, and most probably the carbonic acid. Sulphuretted hydrogen gas, dissolved in water, also reddens litmus, but not after boiling.

2. To ascertain whether the change be produced by carbonic acid or by sulphuretted hydrogen, when experiment shows that the reddening cause is volatile, add a little lime-water, or, in preference, barytic water. This, if carbonic acid be present, will occasion a precipitate, which will dissolve, with effervescence, on adding a little muriatic acid. Sulphuretted hydrogen may also be contained, along with carbonic acid, in the same water; which will be determined by the tests hereafter to be described.

3. Paper tinged with litmus is also reddened by the presence of carbonic acid, but regains its blue colour on drying. The mineral and fixed acids redden it permanently. That these acids, however, may produce their effect, it is necessary that they should be present in a sufficient proportion. (See Kirwan on Mineral Waters, p. 40.) The dark-blue paper, which is generally wrapped round loaves of refined sugar, is not discoloured by carbonic acid, or sulphuretted hydrogen, but only by the stronger acids.

II. *Infusion of Litmus reddened by Vinegar; Spirituous Tincture of Brazil-wood; Tincture of Turmeric, and Paper stained with each of these three Substances; Syrup of Violets.*

All these different tests have one and the same object.

1. Infusion of litmus reddened by vinegar, or litmus paper reddened by vinegar, has its blue colour restored by pure alkalies and pure earths, and by carbonated alkalies and earths.
2. Turmeric paper and tincture are changed to a reddish-brown by alkalies, whether pure or carbonated, and by pure earths, but not by carbonated earths.
3. The red infusion of brazil-wood, and paper stained with it, become blue by alkalies and earths, and even by the latter, when dissolved by an excess of carbonic acid. In the last-mentioned case, however, the change will either cease to appear, or will be much less remarkable, when the water has been boiled.
4. Syrup of violets, when pure, is, by the same causes, turned green*; as is also paper stained with the juice of the violet, or with the scrapings of radishes.

III. *Tincture of Galls.*

Tincture of galls is the test generally employed for discovering iron; with all the combinations of which it produces a black tinge, more or less intense according to the quantity of iron. The iron, however, in order to be detected by this test, must be in the state of red oxide, or, if oxydized in a less degree, its effect will not be apparent, unless after standing some time in contact with the air. By applying this test before and after evaporation, or boiling, we may know whether the iron be held in solution by carbonic acid, or by a fixed acid: for,

* According to Mr. Accum, syrup of violets, which has lost its colour by keeping, may be restored by agitation, during a few minutes, in contact with oxygen gas.

1. If it produce its effect before the application of heat, and not afterward, carbonic acid is the solvent.

2. If after, as well as before, a mineral acid is the solvent.

3. If, by the boiling, a yellowish powder be precipitated, and yet galls continue to strike the water black, the iron, as often happens, is dissolved both by carbonic acid and by a fixed acid. A neat mode of applying the gall test was used by M. Klaproth, in his analysis of the Carlsbad water; a slice of the gall-nut was suspended by a silken thread in a large bottle of the recent water, and so small was the quantity of iron, that it could only be discovered in water fresh from the spring, by a slowly-formed and dark cloud surrounding the re-agent. (Klaproth, vol. i, p. 279.)

IV. *Sulphuric Acid.*

1. Sulphuric acid discovers, by a slight effervescence, the presence of carbonic acid, whether uncombined or united with alkalies or earths.

2. If lime be present, whether pure or uncombined, the addition of sulphuric acid occasions, after a few days, a white precipitate.

3. Barytes is precipitated instantly, in the form of a white powder.

4. Nitric and muriatic salts, in a dry state or dissolved in very little water, on adding sulphuric acid, and applying heat, are decomposed; and if a stopper, moistened with solution of pure ammonia, be held over the vessel, white clouds will appear.

For distinguishing whether nitric or muriatic acid be the cause of this appearance, rules will be given hereafter.

V. *Nitric and Nitrous Acids.*

These acids, if they occasion effervescence, give the same indications as the sulphuric. The nitrous acid has been recommended as a test distinguishing between hepatic waters that contain hydro-sulphuret of potash, and those that contain only sulphuretted hydrogen gas. In the former case, a precipitate ensues on adding nitrous acid, and a very fetid smell arises; in the latter, a slight cloudiness only appears, and the smell of the water becomes less disagreeable.

VI. *Oxalic Acid and Oxalates.*

This acid is a most delicate test of lime, which it separates from all its combinations.

1. If a water which is precipitated by oxalic acid, become milky on adding a watery solution of carbonic acid, or by blowing air through it from the lungs, by means of a quill or glass tube, we may infer, that pure lime (or barytes, which has never yet been found pure in waters) is present.

2. If the oxalic acid occasion a precipitate before, but not after boiling, the lime is dissolved by an excess of carbonic acid;

3. If after boiling, by a fixed acid. A considerable excess of any of the mineral acids, however, prevents the oxalic acid from occasioning a precipitate, even though lime be present; because some acids decompose the oxalic, and others, dissolving

the oxalate of lime, prevent it from appearing. (Vid. Kirwan on Waters, page 88.)

The oxalate of ammonia, or of potash, (which may easily be formed by saturating their respective carbonates with a solution of oxalic acid) are not liable to the above objection, and are preferable, as re-agents, to the uncombined acid. Yet even these oxalates fail to detect lime when supersaturated with muriatic or nitric acids; and, if such an excess be present, it must be saturated, before adding the test, with pure ammonia. A precipitation will then be produced.

The quantity of lime, contained in the precipitate, may be known, by first calcining it with access of air, which converts the oxalate into a carbonate; and by expelling, from this last, its carbonic acid, by calcination, with a strong heat, in a covered crucible. According to Dr. Marcet, 117 grains of sulphate of lime give 100 of oxalate of lime, dried at 160° Fahrenheit.

The fluuate of ammonia, recommended by Scheele, I find to be a most delicate test of lime. It may be prepared by adding carbonate of ammonia to diluted fluoric acid, in a leaden vessel, observing that there be a small excess of acid.

VII. *Pure Alkalies and carbonated Alkalies.*

1. The pure fixed alkalies precipitate all earths and metals, whether dissolved by volatile or fixed menstrua, but only in certain states of dilution: for example, sulphate of alumine may be present in water, in the proportion of 4 grains to 500, without being discovered by pure fixed alkalies. As the alkalies precipitate so many substances, it is evident that they cannot afford any very precise information, when employed as re-agents. From

the colour of the precipitate, as it approaches to a pure white, or recedes from it, an experienced eye will judge, that the precipitated earth contains less or more of metallic admixture; and its precise composition must be ascertained by rules which will presently be given.

2. Pure fixed alkalies also decompose all salts with basis of ammonia, which becomes evident by its smell (except the salts are dissolved in much water), and also by the white fumes it exhibits when a stopper, moistened with muriatic acid, is brought near.

3. Carbonates of potash and of soda have similar effects.

4. Pure ammonia precipitates all earthy and metallic salts. Beside this property, it also imparts a deep blue colour to any liquid that contains copper or nickel in a state of solution.

5. Carbonate of ammonia has the same properties, except that it does not precipitate magnesia from its combinations. Hence, to ascertain whether this earth be present in any solution, add the carbonate of ammonia till no farther precipitation ensues; filter the liquor; raise it nearly to 212° Fahrenheit; and then add pure ammonia. If any precipitation now occurs, we may infer the presence of magnesia. It must be acknowledged, that zircon, yttria, and glucine, would escape discovery by this process; but they have never yet been found in mineral waters; and their presence can scarcely be expected.

VIII. *Lime-Water.*

1. Lime-water is applied to the purposes of a test, chiefly for detecting carbonic acid. Let any liquor, supposed to con-

tain this acid, be mixed with an equal bulk of lime-water. If carbonic acid be present, either free or combined, a precipitate will immediately appear, which, on adding a few drops of muriatic acid, will again be dissolved with effervescence.

2. Lime-water will also show the presence of corrosive sublimate, by a brick-dust coloured sediment. If arsenous acid (common arsenic) be contained in a liquid, lime-water, when added, will occasion a precipitate, consisting of lime and arsenous acid, which is very difficultly soluble in water. This precipitate, when mixed up with oil, and laid on hot coals, yields the well-known garlic smell of arsenic.

IX. *Pure Barytes, and its Solution in Water.*

1. A solution of pure barytes is even more effectual than lime-water in detecting the presence of carbonic acid, and is much more portable and convenient; since, from the crystals of this earth, the barytic solution may at any time be immediately prepared. In discovering carbonic acid, the solution of barytes is used similarly to lime-water; and, if this acid be present, gives, in like manner, a precipitate soluble with effervescence in dilute muriatic acid.

2. The barytic solution is also a most sensible test of sulphuric acid and its combinations, which it indicates by a precipitate not soluble in muriatic acid. Pure strontites has similar virtues as a test. The quantity of the precipitated substance, indicated by the weight of the precipitate, will be stated in No. XV.

X. *Metals.*

1. Of the metals, silver and mercury are tests of the pre-

sence of hydro-sulphurets, and of sulphuretted hydrogen gas. If a little quicksilver be put into a bottle containing water impregnated with either of these substances, its surface soon acquires a black film, and, on shaking the bottle, a blackish powder separates from it. Silver is speedily tarnished by the same cause.

2. The metals may be used also as tests of each other, on the principle of elective affinity. Thus, for example, a polished iron plate, immersed in a solution of sulphate of copper, soon acquires a coat of this metal ; and the same in other similar examples.

XI. *Sulphate of Iron.*

This is the only one of the sulphates, except that of silver, applicable to the purposes of a test. When used with this view, it is generally employed for ascertaining the presence of oxygen gas, of which a natural water may contain a small quantity.

A water, suspected to contain this gas, may be mixed with a little recently dissolved sulphate of iron, and kept corked up, in a vial completely filled by the mixture. If an oxyde of iron be precipitated in the course of a few days, the water may be inferred to contain oxygen gas.

XII. *Sulphate, Nitrate, and Acetate of Silver.*

These solutions are all, in some measure, applicable to the same purpose.

1. They are peculiarly adapted to the discovery of muriatic acid and of muriates ; for the silver, quitting its solvent, combines

with the muriatic acid, and forms a flaky precipitate, which, at first, is white, but, on exposure to the sun's light, acquires a blueish, and finally a black colour. This precipitate Dr. Black states to contain, in 1000 parts, as much muriatic acid as would form $425\frac{1}{2}$ of crystallized muriate of soda, which estimate scarcely differs at all from that of Klaproth. The same quantity of muriate of silver (1000 parts) indicates, according to Kirwan, $454\frac{3}{4}$ of muriate of potash. A precipitation, however, may arise from other causes, which it may be proper to state.

2. The solutions of silver in acids are precipitated by carbonated alkalies and earths. The agency of the alkalies and earths may be prevented, by previously saturating them with a few drops of the same acid in which the silver is dissolved.

3. The nitrate and acetate of silver are decomposed by the sulphuric and sulphurous acids; but this may be prevented by adding, previously, a few drops of nitrate or acetate of barytes, and, after allowing the precipitate to subside, the clear liquor may be decanted, and the solution of silver added. Should a precipitation now take place, the presence of muriatic acid, or some one of its combinations, may be suspected. To obviate uncertainty, whether a precipitation be owing to sulphuric or muriatic acid, a solution of sulphate of silver may be employed, which, when no uncombined alkali or earth is present, is affected only by the latter acid.

4. The solutions of silver are also precipitated by sulphuretted hydrogen, and by hydro-sulphurets; but the precipitate is then reddish, or brown, or black; or it may be, at first, white, and afterwards become speedily brown or black. It is soluble, in great part, in dilute nitrous acid, which is not the case if occasioned by muriatic or sulphuric acid.

5. The solutions of silver are precipitated by extractive matter ; but, in this case, also, the precipitate has a dark colour, and is soluble in nitrous acid.

XIII. *Nitrate and Acetate of Lead.*

1. Acetate of lead, the most eligible of these two tests, is precipitated by sulphuric and muriatic acids ; but, as of both these we have much better indicators, I do not enlarge on its application to this purpose.

2. The acetate is also a test of sulphuretted hydrogen and of hydro-sulphurets of alkalies, which occasion a black precipitate ; and, if a paper, on which characters are traced with a solution of acetate of lead, be held over a portion of water containing sulphuretted hydrogen gas, they are soon rendered visible ; especially when the water is a little warmed.

3. The acetate of lead is employed in the discovery of uncombined boracic acid, a very rare ingredient of waters. To ascertain whether this be present, some cautions are necessary. (a) The uncombined alkalies and earths (if any be suspected) must be saturated with acetic or acetous acid. (b) The sulphates must be decomposed by acetate or nitrate of barytes, and the muriates by acetate or nitrate of silver. The filtered liquor, if boracic acid be contained in it, will continue to give a precipitate, which is soluble in nitric acid of the specific gravity of 1.3.

XIV. *Nitrate of Mercury, prepared with and without Heat.*

This solution, differently prepared, is sometimes employed as a test. But, since other tests answer the same purposes more

effectually, it is unnecessary to describe the application of mercurial solutions. For the same reason, also, oxygenized muriate of mercury is of little use in discovering the ingredients of mineral waters.

XV. *Muriate, Nitrate, and Acetate of Barytes.*

1. These solutions are all most delicate tests of sulphuric acid and of its combinations, with which they give a white precipitate, insoluble in dilute muriatic acid. They are decomposed, however, by carbonates of alkali; but the precipitate occasioned by carbonates is soluble in dilute muriatic or nitric acid, with effervescence, and may even be prevented by adding, previously, a few drops of the same acid as that contained in the barytic salt, which is employed.

One hundred grains of dry sulphate of barytes contain (according to Klaproth, vol. i, p. 168) about $45\frac{1}{2}$ of sulphuric acid of the specific gravity 1850; according to Clayfield (Nicholson's Journal, 4to, iii, 38) 33 of acid, of sp. gr. 2240; according to Thenard, after calcination, about 25; and, according to Mr. Kirwan, after ignition, 23.5 of real acid. The same chemist states, that 170 grains of ignited sulphate of barytes denote 100 of dried sulphate of soda; while 136.36 of the same substance indicate 100 of dry sulphate of potash; and 100 parts result from the precipitation of 52.11 of sulphate of magnesia.

- From Klaproth's experiments, it appears that 1000 grains of sulphate of barytes indicate 595 of desiccated sulphate of soda, or 1416 of the crystallized salt. The same chemist has shown, that 100 grains of sulphate of barytes are produced by the precipitation of 71 grains of sulphate of lime.

2. Phosphoric salts occasion a precipitate also, which is soluble in muriatic acid without effervescence.

XVI. *Prussiates of Potash and of Lime.*

Of these two, the prussiate of potash is the most eligible. When pure, it does not speedily assume a blue colour on the addition of an acid, nor does it *immediately* precipitate muriated barytes.

Prussiate of potash is a very sensible test of iron, with the solutions of which in acids it produces a Prussian blue precipitate, in consequence of a double elective affinity. To render its effect more certain, however, it may be proper to add, previously, to any water suspected to contain iron, a little muriatic acid, with a view to the saturation of uncombined alkalies or earths, which, if present, prevent the detection of very minute quantities of iron.

1. If a water, after boiling and filtration, does not afford a blue precipitate, on the addition of prussiate of potash, the solvent of the iron may be inferred to be a volatile one, and probably the carbonic acid.

2. Should the precipitation ensue in the boiled water, the solvent is a fixed acid, the nature of which must be ascertained by other tests.

In using the Prussian test for the discovery of iron, considerable caution is necessary, in order to attain accurate results. The prussiate should, on all occasions, be previously crystallized; and the quantity of oxide of iron, essential to its consti-

tution, or at least an invariable accompaniment, should be previously ascertained in the following manner. Expose a known weight of the crystallized salt to a low red-heat in a silver crucible. After fusing and boiling up, it will become dry, and will then blacken. Let it cool; wash off the soluble part; collect the rest on a filter; dry it, and again calcine it with a little wax. Let it be again weighed, and the result will show the proportion of oxide of iron present in the salt which has been examined. This varies from 22 to 30 and upwards per cent. When the test is employed for discovering iron, let a known weight of the salt be dissolved in a given quantity of water; add the solution gradually, and observe how much is expended in effecting the precipitation. Before collecting the precipitate, warm the liquid, which generally throws down a further portion of Prussian blue. Let the whole be washed and dried, and then calcined with wax. From the weight of the oxide obtained, deduct that quantity, which, by the former experiment, is known to be present in the prussiate that has been added; and the remainder will denote the quantity of oxide of iron, present in the liquid which is under examination.

3. Besides iron, the prussiated alkalies also precipitate muriate of alumine. No conclusion, therefore, can be deduced, respecting the non-existence of muriate of alumine, from any process, in which the prussic test has previously been used. It will, therefore, be proper, if a salt of alumine be indicated by other tests, to examine the precipitate effected by prussiate of potash. This may be done by repeatedly boiling it to dryness with muriatic acid, which takes up the alumine, and leaves the prussiate of iron. From the muriatic solution, the alumine may be precipitated by a solution of carbonate of potash.

4. According to Klaproth (II, 55), solutions of yttria (which earth, however, is not likely to be present in any mineral water) afford with the prussian test, a white precipitate, passing to pearl-grey, which consists of prussiate of yttria. This precipitate disappears on adding an acid, and hence may be separated from prussiated iron. The same accurate chemist states, that the prussian test has no action on salts with base of glucine (ib.); but that it precipitates zircon from its solutions. (II, 214.)

The prussiated alkalies decompose, also, all metallic solutions, excepting those of gold, platina, iridium, rhodium, osmium, and antimony.

XVII. *Succinate of Soda and of Ammonia.*

1. The succinate of soda was first recommended by Gehlen, and afterwards employed by Klaproth (Contributions, II, 48), for the discovery and separation of iron. The salt, with base of ammonia, has also been used for a similar purpose by Dr. Marcet, physician to Guy's hospital, in a skilful analysis of the Brighton chalybeate, which is published in the new edition of Dr. Saunders's Treatise on Mineral Waters.

The succinic test is prepared by saturating carbonate of soda or ammonia with this acid, already described, Ch. XIX, Sect. 8. In applying the test, it is necessary not to use more than is sufficient for the purpose; because an excess of it redissolves the precipitate. The best mode of proceeding is to heat the solution containing iron, and to add gradually the solution of succinate, until it ceases to produce any effect. A brownish precipitate is obtained, consisting of succinate of iron. This, when calcined with a little wax, in a low red-heat,

gives an oxide of iron, containing about 70 per cent. of the metal. From Dr. Marcet's experiments, it appears, that 100 grains of iron, dissolved in sulphuric acid, then precipitated by the succinate test, and afterwards burned with wax, give 148 of oxide of iron; that is, 100 grains of the oxide indicate about $67\frac{1}{2}$ of metallic iron.

2. The succinates, however, it is stated by Dr. Marcet and Mr. Ekeberg, precipitate alumine, provided there be no considerable excess of acid in the aluminous salt. On magnesia it has no action, and, hence, may be successfully employed in the separation of these two earths. If 100 parts of octahedral crystals of alum be entirely decomposed by succinate of ammonia, they give precisely 12 parts of alumine, calcined in a dull red-heat. The succinate of ammonia, it is stated by Mr. Ekeberg (*Journ. des Mines*, No. 70), precipitates glucine; and the same test, according to Klaproth (II, 214), throws down zircon from its solutions.

XVIII. *Phosphate of Soda.*

An easy and valuable method of precipitating magnesia has been suggested by Dr. Wollaston. It is founded on the property which fully neutralized carbonate of ammonia possesses; first to dissolve the carbonate of magnesia, formed when it is added to the solution of a magnesian salt, and afterwards to yield the earth to phosphoric acid, with which, and ammonia, it forms a triple salt. For this purpose, a solution of carbonate of ammonia, prepared with a portion of that salt which has been exposed, spread on a paper, for a few hours to the air, is to be added to the solution of the magnesian salt sufficiently concentrated; or to a water suspected to contain magnesia, after being very much reduced by evaporation. No

precipitate will appear, till a solution of phosphate of soda is added, when an abundant one will fall down. Let this be dried in a temperature not exceeding 100° Fahrenheit. One hundred grains of it will indicate 19 of pure magnesia, or about 64 of muriate of magnesia.

XIX. *Muriate of Lime.*

Muriate of lime is principally of use in discovering the presence of alkaline carbonates, which, though they very rarely occur, have sometimes been found in mineral waters. Carbonate of potash exists in the waters of Aix-la-Chapelle; that of soda in the water of a few springs and lakes; and the ammoniacal carbonate was detected by Mr. Cavendish, in the waters of Rathbone-place. Of all the three carbonates, muriate of lime is a sufficient indicator; for those salts separate from it a carbonate of lime, soluble with effervescence in muriatic acid.

With respect to the discrimination of the different alkalies, potash may be detected by the nitro-muriate of platina, which distinctly and immediately precipitates that alkali and its compounds, and is not affected by soda. Carbonate of ammonia may be discovered by its smell; and by its precipitating a neutral salt of alumine, while it has no action apparently on magnesian salts.

To estimate the proportion of an alkaline carbonate present in any water, saturate with sulphuric acid, and note the weight of real acid which is required. Now, 100 grains of real sulphuric acid saturate 121.48 potash, and 78.32 soda.

XX. Solution of Soap in Alcohol.

This solution may be employed to ascertain the comparative hardness of waters. With distilled'd water it may be mixed, without any change ensuing; but if added to a hard water, it produces a milkiness, more considerable as the water is less pure; and, from the degree of this milkiness, an experienced eye will derive a tolerable indication of the quality of the water. This effect is owing to the alkali quitting the oil, whenever there is present in a water any substance, for which the alkali has a stronger affinity than it has for oil. Thus all uncombined acids, and all earthy and metallic salts, decompose soap, and occasion that property in waters which is termed hardness.

XXI. Alcohol.

Alcohol, when mixed with any water, in the proportion of about an equal bulk, precipitates all the salts which it is incapable of dissolving. (See Kirwan on Waters, p. 263.)

XXII. Hydro-Sulphuret of Ammonia.

This and other sulphurets, as well as water saturated with sulphuretted hydrogen, may be employed in detecting lead and arsenic; with the former of which they give a black, and with latter a yellowish, precipitate. As lead and arsenic, however, are never found in natural waters, I shall reserve, for another occasion, what I have to say of the application of these tests.

TABLE,

*Showing the Substances that may be expected in Mineral Waters,
and the Means of detecting them.*

Acids in general. Infusion of litmus. Syrup of violets, I.

Acid, boracic. Acetate of lead, XIII. 3.

Acid, carbonic. Infusion of litmus, I. 1. 2. Lime water, VIII. 1. Barytic water, IX. 1.

Acid, muriatic. Nitrate and acetite of silver, XII.

Acid, nitric. Sulphuric acid, IV. 4.

Acid, phosphoric. Solutions of barytes, XV. 2.

Acid, sulphurous. By its smell, and destroying the colour of litmus, and of infusion of red roses: by the cessation of the smell a few hours after the addition of the black oxide of manganese.

Acid, sulphuric. Solution of pure barytes, IX. Barytic salts, XV. Acetite of lead, XII.

Alkalies in general. Vegetable colours, II. Muriate of lime, XIX.

Ammonia. By its smell, and tests, II.

Barytes and its compounds. By sulphuric acid, IV.

Carbonates in general. Effervesce on adding acids.

Earths dissolved by carbonic acid. By a precipitation on boiling; by pure alkalies, VII.

Iron dissolved by carbonic acid. Tincture of galls, III. 1. Prussiate of potash, XVI. 1. Succinate of ammonia, XVII.

Iron dissolved by sulphuric acid. Same tests, III. 3. XVI. 2. XVII.

Lime in a pure state. Water saturated with carbonic acid. Blowing air from the lungs. Oxalic acid, VI.

Lime dissolved by carbonic acid. Precipitation on boiling. Caustic alkalies, VII. Oxalic acid, VI.

Lime dissolved by sulphuric acid. Oxalate of ammonia, VI. Barytic solutions, IX. and XV.

Magnesia dissolved by carbonic acid. Precipitation on boiling; the precipitate soluble in dilute sulphuric acid.

Magnesia dissolved by other acids. Precipitated by pure ammonia, not by the carbonate, VII. 5. Phosphate of soda, XVII.

Muriates of alkalies. Solutions of silver, XII.

————— *of lime.* Solutions of silver, XII. Oxalic acid, and oxalate of ammonia, VI.

Sulphates in general. Barytic solutions, IX. and XV. Acetite of lead, XII.

Sulphate of alumine. Barytic solutions, IX. and XV. A precipitate by carbonate of ammonia not soluble in acetous acid, but soluble in pure fixed alkalies by boiling. Succinates, XVII. 2.

Sulphate of lime. Barytic solutions, IX. and XV. Oxalic acid, and oxalates, VI. A precipitate by alkalies not soluble in dilute sulphuric acid.

Sulphurets of alkalies. Polished metals, X. Smell on adding sulphuric or muriatic acid. Nitrous acid, V.

Sulphuretted hydrogen gas. By its smell. Infusion of litmus, I. Polished metals, X. Acetite of lead, XIII. 2*.

§ 2. *Analysis of Waters by Evaporation.*

The reader, who may wish for rules for the complete and accurate analysis of mineral waters, will find in almost every elementary work a chapter allotted to this subject. He may also consult Bergmann's *Physical and Chemical Essays*, Vol. I, Essay 2, and Kirwan's *Essay on the Analysis of Mineral Waters*, London, 1799. As this manual, however, may sometimes be employed as a travelling companion, and may attend the chemist where more bulky works cannot be had, it may be proper to state, briefly, the mode of analysing waters, by the more certain, but still not unobjectionable, mode of evaporation.

Before evaporation, however, the gaseous products of the water must be collected, which may be done by filling with it a

* The vapour of putrefying animal or vegetable matter dissolved in water, according to Klaproth, Vol. I, p. 590, often gives a deceptive indication of sulphuretted hydrogen.

large glass bottle, capable of holding about fifty cubical inches, and furnished with a ground stopper and bent tube. The bottle is to be placed, up to its neck, in a tin kettle filled with brine, which must be kept boiling for an hour or two, renewing, by fresh portions of hot water, what is lost by evaporation. The disengaged gas is conveyed, by the bent tube, into a graduated jar, filled with, and inverted in mercury, where its bulk is to be determined. On the first impression of the heat, however, the water will be expanded, and portions will continue to escape into the graduated jar, till the water has obtained its maximum of temperature. This must be suffered to escape, and its quantity be deducted from that of the water submitted to experiment.

In determining, with precision, the quantity of gas, it is necessary to attend to the state of the barometer and thermometer, and to other circumstances already enumerated, page 57. If a considerable proportion of gas be contained in a mineral water, the most commodious method of receiving it is into a small gazometer.

The gases, most commonly found in mineral waters, are *carbonic acid; sulphuretted hydrogen; azotic gas; oxygen gas;* and in the neighbourhood of volcanoes only *sulphurous acid gas.*

To determine the proportion of the gases, constituting any mixture obtained from a mineral water in the foregoing manner, the following experiments may be made. If the use of reagents has not detected the presence of sulphuretted hydrogen, and there is reason to believe, from the same evidence, that carbonic acid forms a part of the mixture, let a graduated tube be nearly filled with it over quicksilver. Pass up a small portion

of solution of potash, and agitate this in contact with the gas. The amount of the diminution will show how much carbonic acid has been absorbed; and, if the quantity submitted to experiment was an aliquot part of the whole gas obtained, it is easy to infer the total quantity present in the water. The unabsorbable residuum consists, most probably, of oxygen and azotic gases; and the proportion of these two is best learned by the use of Dr. Hope's eudiometer (see page 68).

If sulphuretted hydrogen be present, along with carbonic acid, the separation of these two is a problem of some difficulty. Mr. Kirwan recommends that a graduated glass vessel, completely filled with the mixture, be removed into a vessel containing nitrous acid. This instantly condenses the sulphuretted hydrogen, but not the carbonic acid gas. I apprehend, however, that a more eligible mode will be found to be, the condensation of the sulphuretted hydrogen by oxymuriatic acid gas (obtained from muriatic acid and hyper-oxymuriate of potash), adding the latter gas very cautiously, as long as it produces any condensation. Or, perhaps, a better plan of effecting the separation (which, however, I have not at present an opportunity of trying), will be the following: half-fill a graduated vial with the mixed carbonic acid and sulphuretted hydrogen gases, and expel the rest of the water by oxymuriatic acid gas. Let the mouth of the bottle be then closed with a well ground stopper, and let the mixture be kept twenty-four hours. Then withdraw the stopper under water, a quantity of which fluid will immediately rush in. Allow the bottle to stand half an hour without agitation. The redundant oxymuriatic acid gas will thus be absorbed; and very little of the carbonic acid will disappear. Supposing that, to 10 cubic inches of the mixed gases, 10 inches of oxymuriatic gas have been added, and that, after absorption by standing over water, 5 inches remain:

the result of this experiment shows, that the mixture consisted of equal parts of sulphuretted hydrogen and carbonic acid gases.

Whenever this complicated admixture of gases occurs, as in the case of the Harrowgate-water, it is advisable to operate separately on two portions of gas, with the view to determine, by the one, the quantity of carbonic acid and sulphuretted hydrogen; and that of azote and oxygen by the other. In the latter instance, remove both the absorbable gases by caustic potash; and examine the remainder in the manner already directed.

Azotic gas sometimes occurs in mineral waters, almost in an unmixed state. When this happens, the gas will be known by the characters already described as belonging to it, page 64. Sulphurous acid gas may be detected by its peculiar smell of burning brimstone, and by its discharging the colour of an infusion of roses, which has been reddened by the smallest quantity of any mineral acid adequate to the effect.

The vessels employed for EVAPORATION should be of such materials as are not likely to be acted on by the contents of the water. I prefer those of unglazed biscuit ware, made by Messrs. Wedgwoods; but, as their surface is not perfectly smooth, and the dry mass may adhere so strongly as not to be easily scraped off, the water, when reduced to about one-tenth or less, may be transferred, with any deposit that may have taken place, into a smaller vessel of glass. Here let it be evaporated to dryness.

(a) The dry mass, when collected and accurately weighed, is to be put into a bottle, and alcohol poured on it, to the depth of an inch. After having stood a few hours, and been occasion-

ally shaken, pour the whole on a filter, wash it with a little more alcohol, and dry and weigh the remainder.

(*b*) To the undissolved residue, add eight times its weight of cold distilled water; shake the mixture frequently; and, after some time, filter; ascertaining the loss of weight.

(*c*) Boil the residuum, for a quarter of an hour, in somewhat more than 500 times its weight of water, and afterwards filter.

(*d*) The residue, which must be dried and weighed, is no longer soluble in water or alcohol. If it has a brown colour, denoting the presence of iron, let it be moistened with water, and exposed to the sun's rays for some weeks.

I. The solution in alcohol (*a*) may contain one or all of the following salts: muriates of lime, magnesia, or barytes, or nitrates of the same earths. Sometimes, also, the alcohol may take up a sulphate of iron, in which the metal is highly oxidized, as will appear from its reddish-brown colour.

1. In order to discover the quality and quantity of the ingredients, evaporate to dryness; weigh the residuum; add above half its weight of strong sulphuric acid; and apply a moderate heat. The muriatic or nitric acid will be expelled, and will be known by the colour of their fumes; the former being white, and the latter orange-coloured.

2. To ascertain whether lime or magnesia be the basis of the salts, let the heat be continued till no more fumes arise, and let it then be raised, to expel the excess of sulphuric acid. To the dry mass, add twice its weight of distilled water. This will take up the sulphate of magnesia, and leave the sulphate of

lime. The two sulphates may be separately decomposed, by boiling with three or four times their weight of carbonate of potash. The carbonates of lime and magnesia, thus obtained, may be separately dissolved in muriatic acid, and evaporated. The weight of the dry salts will inform us how much of each the alcohol had taken up. Lime and magnesia may also be separated by the use of the phosphate of soda, applied in the manner already described in the preceding section.

The presence of barytes, which is very rarely to be expected, may be known by a precipitation ensuing on adding sulphuric acid to a portion of the alcoholic solution, which has been diluted with 50 or 60 times its bulk of pure water.

II. The watery solution (*b*) may contain a variety of salts, the accurate separation of which from each other is a problem of considerable difficulty.

1. The analysis of this solution may be attempted by crystallization. For this purpose, let one-half be evaporated by a very gentle heat, not exceeding 80° or 90° . Should any crystals appear on the surface of the solution, while hot, in the form of a pellicle, let them be separated and dried on bibulous paper. These are muriate of soda or common salt. The remaining solution, on cooling very gradually, will, perhaps, afford crystals distinguishable by their form and other qualities. When various salts, however, are contained in the same solution, it is extremely difficult to obtain them sufficiently distinct to ascertain their kind.

2. The nature of the saline contents must, therefore, be examined by tests or re-agents.

The presence of an uncombined alkali will be discovered by the stained papers (p. 311), and of acids by the tests (p. 309). The vegetable alkali, or potash, may be distinguished from the mineral, or soda, by saturation with sulphuric acid, and evaporation to dryness; the sulphate of soda being much more soluble than that of potash; or, by super-saturation, with the tartarous acid, which gives a soluble salt with soda, but not with potash. Muriate of platina, also, is an excellent test of potash and its combinations; for, with the smallest portion of this alkali, or any of its salts, it forms a distinct and immediate precipitate; while it is not at all affected by the mineral alkali or its compounds.

If neutral salts be present in the solution, we have to ascertain both the nature of the acid and of the basis. This may be done by attention to the rules already given for the application of tests, which it is unnecessary to repeat in this place.

III. The solution by boiling water, contains scarcely any thing besides sulphate of lime.

IV. The residuum (*d*) is to be digested in distilled vinegar, which takes up magnesia and lime, but leaves, undissolved, alumine and highly oxydized iron. Evaporate the solution to dryness. If it contain acetate of lime only, a substance will be obtained which does not attract moisture from the air; if magnesia be present, the mass will deliquiate. To separate the lime from the magnesia, proceed as in I.

The residue, insoluble in acetous acid, may contain alumine, iron, and silex. The two first may be dissolved by muriatic acid, from which the iron may be precipitated, first by prussiate of potash, and the alumine afterward by a fixed alkali.

Further Information Relative to the Decomposition of the Alkalies.

Mr. Davy, in the concluding lectures of his course at the Royal Institution, gave a distinct and very luminous exhibition of his grand discovery, the decomposition of the alkalies. His first experiments were with potash and soda, which in their dry state are non-conductors, but when moistened, they have the property of conducting electricity. In both instances he clearly produced metalline substances, by bringing them within the action of the voltaic battery. Oxygen was given out at the positive side of the battery, and at the negative little globules of the metallic base were instantly formed. The metalline bases of the alkalies he named POTASSIUM and SODAIUM, choosing the termination *um*, in compliance with the present nomenclature of metals, in order that they might agree with *platinum*, *plumbum*, &c. &c. These new metals, to appearance, are precisely like mercury, but very different from that metal in their various properties, which he enumerated and demonstrated to the satisfaction of every one present. He showed the great inflammability of the new metals, by touching them with the smallest quantity of water, when they instantly took fire. They are both malleable at the common temperature, and may be spread into very thin leaves on a plate of glass, by mere pressure. So great, however, is their attraction for the oxygen of the atmosphere, that they almost instantly became tarnished. Before the discovery of these new metals, only two bodies of this class, viz. iron and platinum, were capable of being welded, and that at a very great heat; whereas separate parts of the potassium and sodaium can be united readily at the common temperature of the atmosphere. The specific gravity of the potassium is to that of water as about six to ten; in the

case of sodaïum, it is as ninety-three to one hundred. Mr. Davy showed, that the metals which he had spread on glass, were easily fusible again by the heat of a spirit lamp, by the application of which they almost instantly run into globules. The attraction of these new metals for oxygen, was shown by their burning at a red-heat, when the alkalies were again revived. In analysing them with great accuracy, he found the potash contained fourteen parts of oxygen, and eighty-four of metalline base, but the soda contained twenty parts of oxygen, to eighty of base. These metals, introduced into a jar of oxy-muriatic gas, spontaneously took fire, and the white fume collected on the glass was in the one case muriate of potash, in the other muriate of soda, or common culinary salt. Particles of the new metals, put into water, decomposed the water, and gave out a brilliant light. The water used was pure distilled water, which instantly after the decomposition of the metals, showed, by means of turmeric paper, that it was become highly alkaline. The same sort of action was exhibited by the nitric acid; and the potassium acted also on the sulphuric and other strong acids. Mr. Davy placed small particles of the metals on ice, and they immediately decomposed the water and gave out a bright light: alkali was likewise formed on the ice.

These metals unite with mercury and form solids: thus, one part of sodaïum and three of mercury being mixed, the two fluids united in a state of solidity. Several other experiments were made, and the professor felt no hesitation in giving his opinion as to the great importance of these discoveries in their application to the arts; and even to an art, which he doubted if he should venture to mention, the art of war, as the destruction occasioned by these metals, if they could be brought into action, would be considerably greater than by those now in use.

In reference to the detail of his own discoveries, he said the present state of knowledge was more likely to produce in him humility than exultation. The experimentalist was not the hero of his own tale, but he could not avoid being the subject of it; and he hoped the experiments and facts exhibited, would be considered independently of any opinion which he had divulged in connection with them. In the present imperfect state of enquiry, it would be presumption to expect that any thing would be permanently established. Alluding to the great powers of the voltaic battery*, he said, some might imagine that the desideratum of the alchemists was accomplished, and that the delusive hopes of those visionaries were, at length, realized: but it ought to be remembered there was an immense interval between the processes of combination and decomposition; that the proper province of chemistry extended but to inorganic matter; that in the powers of combination other agents were employed, with whose nature we were wholly unacquainted, and to whose operation we might for ever remain strangers.

Mr. Davy, having shown his experiments on the fixed alkalis, proceeded to ammonia, which, from the manipulations of Priestley and Steele, was regarded as a compound of hydrogen and nitrogen: he had no doubt, in his mind, that it contained also a portion of oxygen. This he attempted to demonstrate by experiments, particularly by passing some ammonia, in a state of gas, through a porcelain tube, heated to a white heat; the hydrogen and nitrogen were collected, and in the glass vessel through which they passed, moisture was very apparent, which he felt satisfied was water, formed by the oxygen contained in

* Mr. Davy's battery contains thirty-eight thousand square inches of metal plates.

the ammonia. Hence he inferred, that though oxygen had hitherto been considered as the acidifiable principle only, it would be found to be the alkalizing principle likewise.

From the alkalies he proceeded to the earths, which he enumerated and described, and which he considered as the link between the alkalies and metallic oxides; and he had no doubt that they would hereafter yield to some higher powers of the Voltaic battery, and exhibit the parts of which they were composed. On barytes he then made an experiment, showing very decisively that it contained an inflammable principle. He was next led to consider the phænomena of meteoric stones; and the light occasioned by them; Mr. Davy adds, were now perfectly explicable by the facts just discovered; but as to the place whence these bodies came, he gave no opinion, only that from the curves which they described, it was certain that they came from some other world, and were travellers only in our atmosphere; for if they had been formed there, their descent must be perpendicular to the surface of the earth, which, it was known, was not the case. The professor then referred to the several substances that had hitherto been deemed simple, supposing that all might, hereafter, be decomposed; in sulphur and charcoal, it was now known there was hydrogen; he seemed to suspect that the two great principles operating in nature, were the principle of inflammability and a metallic principle. It is our intention, in a subsequent number, to give a more detailed account of the discoveries of this learned chemist, which cannot fail to be highly interesting to every lover of science, and more particularly to those who, having attended the lectures at the Royal Institution, will be glad to have the facts and experiments there exhibited brought again to their recollection.

Med. & Phys. Journ. No. 113.

Jenite, a new Mineral.

M. le Lievre, a member of the National Institute of France, has discovered in the island of Elba a new mineral, to which he has given the name of Jenite, in honour of the battle of Jena. It is opaque, of a black colour, sometimes inclining to brown, and is nearly four times as heavy as distilled water. From the analysis of Messrs. Vauquelin and Descotils, it appears that this mineral contains rather more than half its weight of iron, mixed with a little manganese, and that the rest of the stone is lime and silex, the proportion of the silex being considerably more than double that of the lime.

Med. & Phys. Journ. No. 113.

Sensible Heat excited in Fluids by Agitation.

Dr. Joseph Reade has published an account of an experiment, the result of which is in direct contradiction to the received opinion, that the agitation or friction of fluids cannot excite sensible heat. It is as follows: the temperature of the apartment being 40° , half a pint of water, at a similar heat, was poured into a tin bottle-shaped vessel, into the aperture of which was inserted a thermometer surrounded with chamois leather, and made to fit accurately, with its bulb nearly in the axis. After briskly agitating the vessel for a few minutes, to his great surprise he found that the temperature of the water rose eight degrees; and, even after the apparatus was uncovered and laid at rest on the table, the water continued to rise for several minutes; proving the origin of the heat to be inherent in the fluid, and independent of any external causes. Anxious

to obviate every source of fallacy or objection, Dr. Reade prevented the communication of caloric by his hands, or of radiation from his body, by coating the tin vessel with many layers of woollen cloth carefully wrapped round it, over which there was a tin case, the entire nearly two inches in thickness, and covered externally with three wet towels. In the course of the experiment he dipped his hands frequently in snow water, and also sprinkled the towels. The Rev. Mr. Hincks, lecturer on chemistry in the Cork Institution, to whom the experiment was communicated, on repeating it in a glass bottle, found the heat of the vessel, by means of a thermometer placed between it and the covering, to be inferior to that of the enclosed fluid, and on a par with the atmosphere, which proves in a most satisfactory manner that there could be no communication of caloric from the hand.

Med. & Phys. Journ. No. 113.

Dupuytren's Experiments on Respiration, &c.

According to some cruel, though interesting, experiments reported to the French Institute, by M. Dupuytren, principal director of anatomy at the Medical School, and M. Duprey, professor at the Veterinary School at Alfort, on the subject of respiration; it appears, that the section of the two nerves of the eighth pair (those of the stomach and breast) in animals, is certain and instant death; and that respiration, the most important function of life, is exercised directly under the power of nervous influence, and is inseparable from it.

Med. & Phys. Journ. No. 113.

Prize Medals offered by the Humane Society of Philadelphia.

At a meeting of the managers, on the eighth instant, the decision of the medical professors of the University of Pennsylvania was received, containing information that they have carefully examined the three dissertations for the prize medals, and that “ they are unanimously of opinion, that neither of them are entitled to the medals, as they do not appear to contain any *original* observations ;” at the same time remarking, that they are by no means destitute of merit as to arrangement and style.

The managers adopted their decision, and are again induced to offer,

For the best dissertation on the means of restoring to life, persons apparently dead from drowning, *and more effectual than any yet in use*, a **GOLD MEDAL**, value **ONE HUNDRED DOLLARS**.

For the second best, a **PIECE OF PLATE**, value **FIFTY DOLLARS**.

The dissertations to be sent to the secretary of the society (post paid) by the first of January, 1810.

They may be written in the English, French, or Latin language ; to be accompanied with a sealed paper, containing the author's name and place of residence, which is not to be opened unless the prize is decreed.

They shall be submitted to the judgment and decision of the medical professors of the University of Pennsylvania.

Although the first effort in this truly important research has not proved successful, yet, when we consider its magnitude, it is believed no additional reason need be given for continuing the attempt to enlarge our knowledge, where the preservation of human life is the object. We hope no discouragement will arise from the failure of the late dissertations, in which ingenuity and learning are evident, as our aim is *to arrive at a knowledge of the means of restoring life, more effectual than any yet in use*; being persuaded that the discovery of such means will amply repay the most laborious investigation, and form a new epoch in the progress of humanity and science.

By order of the Managers of the Humane Society,

JOSEPH CRUKSHANK, *President.*

ISAAC SNOWDEN, JUN. *Secretary.*

Philadelphia, June 15th, 1808.

University of Pennsylvania.

At a public commencement, held on the 28th of April last, the degree of doctor of medicine was conferred on the following gentlemen, after having defended the dissertations annexed to their respective names.

MASSACHUSETTS.

William Aspinwall,

On Diabetes Mellitus.

NEW JERSEY.

Isaac H. Hampton,

On Pneumonia.

- Fitz R. Smith,* On the medical Properties of the Common Daffodil.
- Isaac Todd,* On Thirst, and the advantages of abridging the Use of Diluents in Diseases which require Depletion.
- PENNSYLVANIA.
- William P. C. Barton,* On the Chemical Properties and Exhilarating Effects of the Nitrous Oxyde Gas; and its Application to Pneumatic Medicine.*
- Samuel Benezet,* On the Cynanche Trachealis.
- Samuel Betton, jun.* Observations made in two Voyages to India.
- Samuel Colhoun,* On the Influence of Light in producing the Colours of Animal and Vegetable Bodies.
- Matthew Cunningham,* On Local Inflammation.
- John H. Davis,* On Lunar Influence.
- George Fairlamb,* On Hepatitis.
- Nathan Hays,* On the Manner in which Medicines act upon the Living System.
- Isaac Heister,* An Historical and Philosophical Inquiry into Absorption; containing a Series of Arguments to prove the Absorption of Substances not Nutrient, whether applied externally or internally to the Human Body, as well as to that of some inferior Animals.
- Samuel Humes,* On Dyspepsia.
- Samuel Jackson,* An Essay on Suspended Animation.*
- Charles Lukens,* An Essay on Fever.
- J. B. Otto,* On Tetanus.
- Robert Maskell Patterson,* In Proof of the Influence of the Moon in Diseases.
- John Perkin,* On the Hydrocele.
- George Poyntell,* On that Grade of Madness called Manalgia.
- Samuel Stewart,* On Cuticular Absorption.
- John D. Thomas,* On the Scrophulous Disease of the Hip-Joint.
- John Wishart,* On Thyrocele (or Bronchocele).
- Joseph Woollens, jun.* On Hydrocephalus Internus.

DELAWARE.

Henry Marim,

On the Influenza, as it appeared in the State of Delaware, in 1807: with some Observations on the Nature of the Disease.

MARYLAND.

John Arnest,

On Abscess.

Jacob Baer,

On Puerperal Fever.

Samuel Baker,

On the Form of Disease usually denominated Chorea Sancti Viti.

Michael A. Finley,

On the Use of the Muriatic Acid.

William Wilmott Hall,

Strictures on the Use of cold Water in the Cure of Fevers.

Arnold Hannenkampf,

On the Influenza.

James Page,

On Superfætation.

William Pinkney,

On the Cholera Infantum.

William Kilty Smith,

On Mortification.

Thomas Worthington,

On the Modus Operandi of Medicines.

VIRGINIA.

Branch T. Archer,

On Cutaneous Absorption.

George Callaway,

An Experimental Inquiry into the Properties and Effects of the Juglans Cinerea.

Archibald B. Dick,

On the Pulse.

William Foushee, jun.

On Cynanche Trachealis

Robert O. Grayson,

An Investigation of the different Opinions in Favour of the contagious Nature of Remittent and Intermittent Fevers, together with an Inquiry into the Laws of Miasma, &c.

William Grayson,

On the Nourishment of the Fœtus in Utero.

Samuel Greenlee,

On the Advantages of Scepticism in the study and Improvement of Medicine.

Joseph Jones,

On Hepatitis.

Samuel Leake,

On Vision.

Robert Mayo,

On the Sensorium.*

Nathaniel Nelson, jun.

On Measles.

Philip C. Pope,

On the Nature and Treatment of Hypochondriasis.

Boanerges Roberts,

On the Medical Properties of a Species of Asclepias, or Swallow-wort

<i>Isaac A. Smith,</i>	On the Virtues of Mineral Waters.
<i>John Wilson,</i>	On the Transfusion of the Blood.

SOUTH CAROLINA.

<i>William Dicks,</i>	On Tetanus.
<i>Alexander Frazer,</i>	An Attempt to prove that there is no definite period of Utero-Gestation in the Female of the Human Species.
<i>James Haynsworth,</i>	On the Yellow Fever, as it appeared in Charleston, in the year 1807.
<i>Thomas Grimball Prioleau,</i>	On the Aralia Spinosa.
<i>Richard Shubrick,</i>	On Menstruation.
<i>Edmund H. Tucker,</i>	On Cataract.

GEORGIA.

<i>John Hunter Pope,</i>	On the Vesiculæ Seminales.
<i>Reuben S. Safold,</i>	On the Influence of the Mind on the Body, in producing Diseases and Death.

IRELAND.

<i>James Clarke,</i>	On the Diurnal Revolutions of the Body.
<i>Archibald M'Kinney,</i>	An Essay on the Physiology of the Human Mind.

The dissertations marked with an asterisk * were published.

Lectures in Columbia College.

The annual medical lectures of Columbia College will commence on the second Monday of November next, and continue four months, during which the following courses will be given:

- Anatomy and Surgery, by Wright Post, Esq.
- Practice of Physic, and Chemical Lectures, by William Hammersley, M. D.
- Institutes of Medicine, by John C. Osborn, M. D.
- Materia Medica and Botany, by David Hosack, M. D.
- Midwifery, by John R. B. Rogers, M. D.
- Chemistry and Legal Medicine, by James S. Stringham, M. D.

P. S. In the botanical course for the winter, will be exhibited various specimens of indigenous and exotic plants, which will be preserved for that particular purpose; and a second course of botany will be given in the summer season.

Potash, a triple Compound.

Professor Davy, of the Royal Institution, Great Britain, has procured a peculiar metal, by transmitting the galvanic influence, from an apparatus containing nearly 40,000 square inches of surface, through moistened potash.

When this metal is exposed to atmospheric air, or comes in contact with water, it immediately takes fire, by combining with oxygen, and forms potash.

Had Mr. Davy made his experiments in atmospheric air confined by water or mercury, he probably might have found, that a part of the azotic, as well as oxygenous portion of the atmospheric air, was also absorbed.

The following experiment of Dr. Woodhouse seems to prove, that azote is one of the component parts of potash.

The doctor exposed two ounces of potash, mixed with an equal quantity of charcoal in powder, in a covered crucible, to the intense heat of an air furnace, for two hours.

When the mixture became cold, a small quantity of water was poured upon it, and it immediately took fire, and discharged a quantity of ammoniacal gas.

Now, as azote is one of the component parts of ammoniac, and as this base is not contained in either water or charcoal, Dr. Woodhouse concludes it must arise from the potash.

Extract of a letter from Dr. Louis Valentin, of Marseilles, to Dr. Rush, dated June 9th.

“ Professor Joseph Frank, of Wilna, has published a retraction of Dr. Brown’s system of medicine, which he once embraced with enthusiasm. He acknowledges the errors he fell into by following that system exclusively. This retraction does him great honour, and all our journals speak of it in very high terms.”

Dr. Rush’s new theory of the functions of the spleen and liver has been translated and published in the French language, with notes, by Dr. Louis Odier, professor of medicine at Geneva*.

* For an account of this theory, see Museum, Vol. 4.

CORRESPONDENCE.

The sincere pleasure I derive from being able to give extension to the defence of Dr. Hamm, against the charges brought forward (in the last number of this work, and extracted) from the Democratic Press, is counterbalanced, in some measure, by the regret I feel in having given publicity to the production. But having never seen any answer to it, which I could not have supposed would have been denied admittance into the publication which promulgated so serious a charge; I considered it a duty I owed to society to reprint it; and I now regard it as a duty still more sacred, and as an act of justice to Dr. Hamm, to insert the following letter, and the doctor's justification. EDITOR.

Dover, September 9th, 1808.

SIR,

HAVING observed, in the last number of the Medical Museum, an extract from the Democratic Press, prefaced with a few remarks of your own, on the introduction of the small-pox in Dover, by Dr. John Hamm, and feeling sensible of the injurious tendency such an unqualified misrepresentation is calculated to produce, in friendship to Dr. Hamm, and deference to the public, I take the liberty of stating my impressions upon the occasion, and of repelling the opprobrium which is attempted to be attached to his conduct, and which is so derogatory to his character as a gentleman, and so incompatible with his *dignity* and *humanity* as a *man*.

Presuming upon a belief of your respect for truth, candour, and impartiality, predicated upon your laudable exertions to disseminate a knowledge of medical science; I would not for a moment suppose that you would suffer the Medical Museum to become the vehicle of calumny, and to degenerate into an organ of personal recrimination: yet I cannot imagine that your liberality will deny to injured innocence an opportunity of *justification*; and I flatter myself that, as you are unquestionably the admirer of decorum, you will also become the *advocate of justice*; and by inserting the doctor's defence, which I here transmit you enclosed, you will thereby

place the question of *guilt at issue* before the high tribunal of public opinion.

I will just observe here, that so soon as the doctor noticed the extract in the Democratic Press, he forwarded one of his handbills to Mr. Binns for publication. But that gentleman, in the plenitude of his generosity, neglected to give it equal publicity with his extract from the Museum of Wilmington. You will perceive that the language of the doctor is severe, in consequence of the aggravated circumstances of the case; but the energy of his style is only borrowed from the unwarrantable virulence which characterized the acrimonious resolutions which were previously exhibited against him; and is such as he deemed proper for the vindication of his conduct in his own state, to the inhabitants of which he is generally known. Had Mr. Binns been actuated by the principles of justice, the necessity of my trespassing upon your attention would, in all probability, have been superseded; as you could not have given his spurious extract the formidable appearance it now wears, by being contained in the Medical Museum (from whence alone it assumes all its importance), without having, at the same time, in conformity with the dictates of an honest heart, given his answer also a place in your useful work; and which I now solicit you to do, or such part as you may deem essential to his justification. I will simply state, that many of the doctor's remarks were mere personalities, and only calculated for the meridian of Dover, where the transactions hinted at are intimately known to the citizens.

I will state one fact farther with regard to the small-pox. This disease had been introduced at Lewestown, from Philadelphia, in the adjoining county, which, necessarily, created considerable alarm; and, to appease the anxiety which was consequently excited, both physicians and people (having no confidence in vaccination there, as at Dover) introduced inoculation with ultimate unanimity. The contagion from Lewestown shortly spread over a great part of the county, and *justly* gave the inhabitants considerable uneasiness. However, I will forbear particularizing, as the doctor's publication will shield him from any apprehensions from the scrutiny of the learned, the candid, and the unprejudiced. But Mr. Binns had considered that the doctor had offended him some time before; they are antipodes in politics; he therefore gnashed his teeth in silent dudgeon until an opportunity occurred of treating him with this illiberality. Permit me, sir, to remark that your prefatory observations may tend to attach some odium to the character of Dr. Hamm, for his adopting the vari-

olous disease in *supposed preference* to vaccination; but that the contrary is the fact, I can assert from a personal knowledge.

I know that he did obtain the vaccine matter from Philadelphia, and, perhaps, from yourself, in order to benefit the general interests of society, and to secure the many who were endangered throughout the extent of a large and respectable practice; and, so far from his being an enemy to vaccination, I know him to be one of its ardent advocates. Dr. Hamm is known to be a gentleman highly respectable, and is a man of education and merit. As a medical practitioner, he is esteemed eminent, dignified, and indefatigable. Those who have a personal intimacy with Dr. Hamm, will warrant the assertion. They will also perceive, in the ungentlemanly and indecorous expressions which have been employed against him, other grounds, *in the general integrity of his conduct*, more objectionable to the enemies of candour, dignity, and truth, than that of the alleged introduction of the small-pox into Dover; and that from the receptacle of whose hearts the repository of malice has elicited the charge that, "*like a murderer he has a heart devoid of social duty, and fatally bent on mischief;*" and was at first given to the world with the gall-tipped pen of falsehood and detraction.

I have observed with pleasure that *Dr. Hamm has been one of your most intelligent medical correspondents*; and his patronage of your work will certainly merit the indulgence required. Then, sir, let me beg of you, *by the respect you bear for a science your joint labours have united to improve*, to insert his defence, together with his letter, in your next number.

Respectfully yours,

STEPHEN ALEXANDER.

Dr. J. R. Cox.

P. S. The absence of Dr. Hamm, being in the western country, and my having been a student of his, has prompted me to this measure.

Should any difficulty occur to the publication required, or any explanation become necessary to your satisfaction, I pledge myself to remove every impediment which may be founded in propriety, and within the pale of possibility, upon your signifying the existence thereof, by addressing a letter to me in Dover, Delaware.

S. A.

*To the Editor of the Museum of Delaware.**Hinc justitiam discite, majestatem et non temere veritatis.*

MR. JONES,

A publication, over the signatures of Joseph Harper and Cæsar R. Wilson, having made its appearance, a few days ago, in a folio handbill, wherein my conduct has been most wantonly assailed, regardless of the generosity of candour, or the dignity of truth; I feel impelled to urge, in reply, a few remarks, dedicated to justice, and to the calm suggestions of reason.

I mean not to offer a justification, so much as to invite investigation; and I will refer the reader to the publication itself for data; and my only postulatam is, that he may note the incongruity of arrangement, the tissue of inconsistencies, and the laboured zeal of malevolence and falsehood, which characterizes almost every feature of the resolutions. And, with truth, I might add, that the moon-calf publication itself, is a miniature of those characters whose prolific brains conceived, and whose untoward hearts gave birth to this prodigy of phrenzy, fallacy, and detraction.

Crinemque rotantes
Sanguineum populis ulularunt tristia Galli. LUCAN.

I now only have to premise that, but for some half dozen characters whose names have been artfully coupled with others in this unparalleled hydra of folly, this rattletrap of nonsense, I should not have had one solitary thought of injuring a fine-nibbed pen in rejoinder, or have stepped across the street to have arrested the mad career of those modern harpies, or of the Januses themselves; who, clothed with the armour of fancied omniscience, with pompous arrogance have ridiculously proscribed without mercy or deference to the decalogue.

You will perceive it is triumphantly asked "Why did he take the pains to procure matter to inoculate his brother's family?" Truly problematical indeed! And I will ask in my turn*, Why did fire burn papers? I claim your attention to part of the introductory resolution of the committee,

* Alluding to the returns for the election of governor having been destroyed by the person principally pointed at in this handbill.

“that by his obstinately persisting in his determination, unnecessarily, and without any cause whatever, to bring amongst us a dreadful disease, which the humane and benevolent of all parts of the world have, for years past, endeavoured to blot from the list of human calamities, he will deserve the indignation and contempt of the members of this meeting.” Here you may observe both absurdity and falsehood; for, so far from persisting in inoculation after the first meeting, though actually applied to by several persons to be inoculated, that I did then, and have since, and do still, refuse to inoculate. But even had I continued inoculating, I should have been amply justified upon the inconsistent and partial principle expressed and adopted at the first meeting, wherein they suffered those affected with the measles, a more dangerous disease, to remain in town, notwithstanding Mr. Harrington, whose family were only now discovered to be slightly infected, voluntarily proffered, at the meeting, to remove them into the country. But further: the circumstance of the measles, supposed to be in town, was then made the ostensible ground for the rejection of the small-pox. It was then urged, with *perfect confidence*, by the FACULTY*, and carried, that the vaccine disease should be introduced. See the inconsistency! it was accordingly introduced. But, strange to tell, those very persons who adopted the resolution, afterwards unanimously resolved, that the *small-pox* should be immediately introduced, notwithstanding every one who was actually inoculated were now removed from town. “And for what purpose?” “Where was the necessity?” And I will ask, where was the necessity, eight years ago, for clandestinely inoculating a black woman in the leg, and thereby spreading “inconvenience, distress, and death?” Permit me to answer these interrogatories. It was “for the paltry consideration of fees.” And who had these fees in consideration? And who had them in consideration eight years ago? Certainly not myself, for I did not practice here at that time; and, it is well known, at this time, that my practice, in this town, is not an object of consideration. Who then had them in “consideration?” Let the industry and agility which has been displayed upon the present momentous occasion answer the questions. It may, perhaps, be asked, why vaccination was not continued after its introduction? Let the question be solved by him who has discovered the most ardent itch for the “paltry consideration of fees.” Or, I will solve it for him: because the cow-pox is not contagious, and therefore not so profitable. Look at this: “He requested A. Harris to keep the inoculation of his boy secret; with remonstrated with

* Meaning, ironically, only one person, Dr. Sykes.

him on the impropriety of his conduct in regard to his apprentice." It is false; it is impertinent. Quere, would it be amiss to issue instanter a "Breve de infecto variolis amovendo*," to oust the variolous disciples of Fabula from the town? Though, indeed, this identical "Breve de infecto variolis amovendo" has been as singularly engendered and as miraculously natalized as Milton's Sin from the brain of Lucifer!—And at this: "His servant was twice inoculated†." It is false also, it is maliciously false. Insidious perfidy! Humanity, how art thou degraded! But why may not those be now privileged to disregard the majesty of truth in gratification of malevolence, and in consideration of interest, who were privileged in 1802?—And at this: "He has a heart devoid of social duty, and fatally bent on mischief." Hold, vipers, hide the venom sting of malice. Who is it that is possessed of such a heart as here alluded to? Is it not those who would, like the midnight prowler, wish to rob the widow and the orphan? For observe this: "Did he not permit this same servant of his, knowing the disease to be upon him, to attend at a public house as ostler and waiter from Sunday till Saturday following, thereby putting in jeopardy the health, nay the lives of hundreds?" This—false in toto. But, even admitting it to be true, did they who advertised it regard "social duty," when by this single circumstance they basely attempted to dissever the means of support from the widow and the orphan? Who then is "fatally bent on mischief?" For I would humbly presume, that they only who would basely descend to pitiful misrepresentation, were "fatally bent on mischief." But it is not true that my servant had the eruption on him from Sunday till Saturday following; he had it not on Tuesday when I left town, and hither I did not return till Friday. Mark how a plain tale will put them down: their extreme liberality did not permit them to tell you that I was absent nearly four days; that when I left town his arm had not assumed the appearance of disease; that he had not been confined or indisposed an hour; that no one had been infected by him; and that so little danger was then and is now apprehended, that the family in which he lives does not think it necessary to become inoculated; and had it not been for the unanimous

* A new-fangled writ to expel diseases!! Had they not better issue a few "Breve de infecto variolis amovendo's" against agues, and to keep the *catadids* from singing?

† Doctor Morris unequivocally declares it to be his opinion, that my servant had been inoculated once only: he examined his arm several times, and I state this fact with his approbation.

resolution of the last town meeting, there would not now be a solitary case of small-pox in Dover. And where then was the necessity of passing such a resolution, when all those who were infected were sent out of town by the Cerberian "Breve de infecto variolis amovendo?" It is exultingly asked too, "Why this insidious covert conduct?" "Why give assurances which he knew were false?" To the first, I reply, that it is malicious. To the second, that it is false. Where is there a physician, of the least experience, who has not been deceived by the appearance of the punctured spot, and particularly in an African? I repeatedly requested two of the committee to examine his arm and judge for themselves, and not rely on my opinion. During my absence why did the committee not do so? I will tell you. It was wished by him, who always acts covertly and insidiously to gratify his passions, that he might remain and spread the disease, and thereby cover his designs and calumniate another. Or why take so much pains to procure matter? Whose conduct then, I ask, is "most covert and insidious;" he that recommended the vaccine and would not adhere to it, in order to gain time, but afterwards introduced the small-pox, or his who first candidly advised the propriety of inoculation, as the only means to quiet the minds of the people?

Having noticed the most prominent absurdities of the handbill, I will close with a few observations, leaving the remainder, as a monument of folly, to that contempt which it merits.

You will observe that, in the first instance, I had been applied to, to inoculate, and that I could not have had the anxiety, as is represented, to do so in town, because I did refuse, on application, to inoculate several persons, who would inevitably have spread it. On the contrary, such was the anxiety, that one person inoculated himself! I had, early in March, inoculated several families in the neighbourhood. It may be proper to observe also, that I had previously procured vaccine matter, but the want of confidence in it in the circle of my patients, induced me to introduce the variolous disease. The same want of confidence existed at Lewes, and, it may be seen, exists here at this moment.

I now solicit my fellow-citizens, among whom I have many years lived in satisfaction, to throw aside opinions predicated upon prejudices, and take facts as they are. If I am wrong, blame me; but should they, upon cool and impartial inquiry and consideration, discover greater impropriety and heat of passion in the conduct of others, then, let the opprobrium attach where it is due. I cheerfully submit; Dies doceat.

JOHN HAMM.

Dover, April 15, 1808.

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FOREIGN AND DOMESTIC.

History of Diseases, &c. from Ancient Authors.

NO. III.

CONCERNING THE ACUTE DISEASES OF THE BLADDER*.

THE bladder of urine is affected with great and difficult pains in acute diseases, even when it sympathizes with other parts ; but the pain is still greater, and more deadly, if it originates from itself, because it is very powerful in communicating the disease to all parts of the body, to the nerves and mind. The bladder is a nervous substance, cold and white, and situated at a distance from the innate heat, but very near to the external cold, for it lies low in the *sacer venter*, in

Aretæus, Book I, Chap. X.

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x

the direction of the thorax, and performs the very necessary office of emitting the urine. But should it be suppressed, either from calculi, grumous blood, or any other calamity, natural or foreign, it is attended with death. In women it inflames and compresses the *uterus*, but in men the *rectum intestinum*. In many the bladder is distended from an involuntary retention arising from modesty in large assemblies, or from repletion, and no longer emits the urine from its inability to contract: when, therefore, the urine is suppressed, the superior parts, viz. the kidneys, are filled, the ureters are distended, a dull pain affects the *ilia*, spasms, tremor, shiverings, and an affection of mind take place. But if to these an ulcer or inflammation be added, the bad effects are many: death, however, is the most certain, which arises from an ulcer. Ulcers, abscess, suppuration, and whatsoever does not fall under the definition of acute, shall be treated by and by, under the head of chronic diseases: those which are acute and prove mortal in the space of fourteen days, or somewhat sooner or later, such as inflammation, concreted blood, or a stone falling into the neck of the bladder, I will discuss at present.

Should any of these, therefore, take place, there is a suppression of urine, a swelling in the epigastric region, a shooting pain over the whole belly; the bladder is turgid, a cold sweat breaks out on the tenth day, with vomiting of phlegm, then of bile; there is a cold over the whole body, but more especially the feet: if the disease still increases, fevert akes place with hiccup, the pulse is frequent, irregular, and small, a redness is diffused over the face, the patients are thirsty; ambiguity of mind, affection of the understanding, and spasms ensue.

Besides, the bladder is inflamed from poisonous medicines, *cantharides*, or *buprestis*, and wind, the whole belly becomes

violently affected, nor is death at any great distance. Sometimes there is a hæmorrhage of thin yellow blood from the bladder, which very seldom proves mortal, although the suppression is attended with difficulty: the chief danger arises from grumous blood and inflammation, for cold and extinction of inward heat follow, with gangrene and all its train of evils, which are deadly.

The winter and autumn are the most productive of these affections. The period of life liable to be affected is manhood, but old age in a greater degree; at other seasons and periods of life, they are not only less prevalent, but less mortal. Of all others, boys are the least subject to these disorders.

THE CURE OF THE ACUTE DISEASES OF THE BLADDER.

Acute affections befall or take place in the bladder, resembling those incident to the kidneys, such as inflammations, ulcers, calculi, and grumous concretions, to which succeed a suppression of urine and strangury; but the pain in this viscus is more acute, and death more sudden, for the bladder is a broad nerve, but the kidneys resemble the liver, having somewhat the appearance of concremented blood, in which, too, the most excruciating and lamentable diseases take place; hence death, with all its dismal train, assails miserable and wretched mortals.

In the first place, therefore, that part of the belly called *cænon*, or the flank, should be cut, and the bladder moistened with plenty of oil, together with rue and anise. But should

grumous blood be the cause of the pain and suppression of urine, oxymel ought to be drank, or a small quantity of limestone with mulse, in order to dissolve the *grumi*, or concretions; likewise every thing that provokes urine, both herbs and seeds: should the danger, however, arise from hæmorrhage, this requires a remedy sooner than any thing else, nor is it to be considered as a trivial matter. In such a case, the application of those remedies which suppress the blood are beneficial; refrigerating and moistening the bladder with the ointment of roses and wine, covering it likewise with wool, dipt in hyssop, are serviceable. Epithems are likewise advantageous, made from dates steeped in wine, together with the pomegranate, or the juice of sumach: but if it cannot endure the epithems which are heavy, nor any great degree of cold, proper care ought to be taken not to refrigerate the bladder much, especially as it is naturally cold and very thin; it should be anointed with gleucine oil, *acacia* or *hypocistis* with wine: sponges are to be abstained from, unless a violent hæmorrhage urges. The food should be of the frumentaceous kind, easy of concoction, producing good juices, and promoting urine, such as has already been mentioned by me, in the chapter on the kidneys: let it be chiefly milk, sweet wine, that called *Theræum* or *Scybellite*; the medicines ought to be potable, promoting urine, of a pleasant smell, fluxile, and such as fall under that description. The baulm crickets are the most useful remedy for the bladder: in their season, they ought to be roasted and exhibited instead of food; out of season they should be dried and beaten with water; and let there be a small quantity of the root of spikenard, added to a decoction of these insects. The patient ought likewise to sit down in the same, instead of a bath, in order to produce a relaxation of the bladder. But should the impaction of *calculi* suppress the urine, the stone ought to be re-

moved by the instrument called a *catheter*, and the urine drawn off, unless there is an inflammation present. When the parts are inflamed, the passage does not admit the instrument; moreover, the patients are wounded thereby: but if the remedy cannot easily be performed, and the patient is excruciated with pain, an incision ought to be made, immediately under the gland, into the neck of the bladder, in order that the stone may be got rid of, and to promote an effusion of urine. Afterwards, the principal attention should be directed to the cure, by making the wound cicatrize: if this cannot be done, it is better that a *rhœas* or flux of matter should be the consequence, during the remaining part of life, than that the patient should die miserably from excruciating pain.

On the Structure and Uses of the Spleen. By Everard Home,
Esq. F. R. S*.

IN bringing forward a fact of so much importance, as a communication between the cardiac portion of the stomach and the circulation of the blood, through the medium of the spleen, I shall not take up the time of the society by offering any preliminary observations, but state the circumstances which led to the discovery, and the experiments by which the different facts have been ascertained.

During the investigation of the functions of the stomach (in which I have been lately engaged), it was found, that while digestion is going on, there is a separation between the cardiac and pyloric portions, either by means of a permanent or mus-

* From the last number of the Philosophical Transactions

cular contraction. This fact placed the process of digestion in a new light, and led me to consider in what way the quantities of different liquors, which are so often taken into the stomach, can be prevented from being mixed with the half-digested food, and interfering with the formation of chyle.

Pursuing this inquiry, I found that the fluids are principally contained in the cardiac portion, and the food that has reached the pyloric portion is usually of one uniform consistence, so that the fluids, beyond what are necessary for digestion, would appear to be carried out of the stomach, without ever reaching so far as the pylorus. To ascertain the truth of this opinion is the object of the present paper.

The lymphatic vessels of the stomach are numerous, but they are equally or more so in the other viscera. Many circumstances appeared to render it probable, that the spleen is the route by which liquids are conveyed. The more I considered the subject, new reasons in favour of this opinion crowded on my mind, so as almost to enforce conviction, and made me set about devising various methods, by which its truth or falsehood might be established.

The first point to be decided was, whether the liquids received into the stomach do escape in any considerable quantity, when prevented from passing out at the pylorus. This was ascertained by the following experiment, made October 31, 1807, with the assistance of Mr. Brodie, Mr. W. Brande, and Mr. Clift.

The pylorus of a small dog was secured by a ligature, and a few minutes afterwards five ounces, by measure, of an infusion of indigo in water, of the temperature of the atmosphere, were

injected by the mouth into the stomach. At the end of half an hour, the dog became sick, and brought up, by vomiting, two ounces of a nearly colourless fluid. The dog was immediately killed, and the different parts were examined. The pylorus was found completely secured by the ligature, so that nothing could pass in that direction. The pyloric portion of the stomach was found empty and contracted; the cardiac portion contained about two ounces of solid contents, enveloped in a gelatinous substance, and one ounce of water, with little or no colour, the indigo being completely separated from it, and spread over the surface of the internal membrane. Of the five ounces of water thrown into the stomach, two were brought up by vomiting, and one only remained; two ounces had therefore escaped in the course of half an hour. As the stomach contained two ounces of solid food at the time the experiment was made, it is reasonable to suppose that there was also some liquid in it, and, in this case, the whole quantity that escaped must have exceeded two ounces. On examining the external covering of the stomach, and along the course of the vasa brevia, where the absorbents usually pass, none were discovered, so that these vessels were not at that time carrying any liquid.

The spleen was turgid, unusually large, and its external surface very irregular; when cut into, small cells were everywhere met with, containing a watery fluid, and occupying a considerable portion of its substance. This appearance, which I had never seen before, made me inquire if it had been taken notice of by others, and endeavour to ascertain the circumstances under which it is produced. The following statement contains the information which I have received on this subject :

Malpighi appears to be the first anatomist who had any particular knowledge of the structure of the spleen. He describes

its capsule, and a net-work which pervades every part of the substance. He mentions a number of small glands, which are hollow and surrounded by arterial zones, but he had never been able to trace any venal branches into them. He believed that there was a cellular structure in the spleen containing red blood, interposed between the arteries and veins; this led him to adopt a theory that the net-work was muscular, and by its action propelled the blood, so that there was a systole and diastole in the spleen, as in the heart.

Stukely, in his Gulstonian lecture, has very closely copied Malpighi, without giving any additional information.

Cuvier, the latest writer on the subject, in his *Leçons d'Anatomie comparée*, corrects the error of Malpighi, respecting the nature of the net-work, which he states to be composed of elastic ligament, and says that there are small corpuscles, whose use is unknown, and which disappear when the blood-vessels are minutely injected.

In the course of the present investigation, I have examined the spleen after death under the ordinary circumstances, and have found the appearances described by Cuvier. I have also examined it frequently immediately after the stomach had received unusual quantities of liquids, and in that state have found invariably that the corpuscles of Cuvier, which were the glands of Malpighi, are distinct cells containing a fluid, which escapes when the cells are punctured, and renders their membranous coat visible, so that it would appear, that the distension of these cells is connected with the state of the stomach, and therefore only takes place occasionally; and that the elastic capsule, by which the spleen is surrounded, adapts the organ to these changes in its volume.

On examining further into the structure of the spleen, in which I have been materially assisted by Mr. Brodie, the following facts have been ascertained :

In the spleen of the bullock, horse, and hog, the cells, when the arteries and veins are injected with coloured size, are seen to have numerous arterial branches ramifying in their coats, but no venal ones, which confirms the statement of Malpighi ; and, when the cells are empty and contracted, and the blood-vessels filled to a great degree of minuteness, the appearance of cells is entirely lost, as stated by Cuvier.

When the cells were in a distended state, their cavities in a great many instances were very distinct, having been laid open in making a section of the spleen. The intermediate parts of the spleen are but sparingly supplied with arterial branches, and the smaller ones do not appear to have any particular distribution.

When the veins only are injected, their branches appear more numerous, and larger than those of the arteries, making the whole substance of the spleen of a red colour. They appear to arise from the outside of the cells, going off at right angles to their circumference, like radii. Where the injection has not been very minute, they are seen to arise at so many points of the capsule ; but where the injection has got into smaller branches, their number is so much increased, that they appear to form plexuses round the cells.

The trunk of the splenic vein, compared with that of the artery, when both are filled with wax, is found to be in the proportion of five to one in its size. This was ascertained both by an accurate measurement of their diameters, and by weighing

half an inch in length of each in a very nice balance ; the disproportion between them is greater, than between corresponding veins and arteries in other parts of the body.

Having acquired this knowledge of the internal structure of the spleen, I made the following experiment with a decoction of madder. The substance was employed, from the animals who feed on it having their bones tinged with red, so that there can be no doubt of its colouring matter being carried into the circulation of the blood. I was much disappointed on seeing the colour of the decoction, which, instead of being a bright red (the tinge communicated to the bones), was of a dirty brown. The same gentleman assisted me as in the former experiment.

Nov. 8, 1807, seven ounces of a strong decoction of madder were injected into the stomach of a dog, immediately after the pylorus had been secured. At this time the dog voided some urine, which was limpid and colourless. In 42 minutes, 2 ounces of a yellowish fluid were brought up by vomiting. In 18 minutes more, the dog vomited again; what came up proved to consist of $3\frac{1}{2}$ ounces of solid matter, and 3 ounces of liquid. In 15 minutes afterwards, 5 ounces of the decoction were injected, which remained quietly on the stomach for two hours and a quarter, at the end of which period the dog was killed. In the act of dying, he made water, in the quantity of two ounces, of a dark muddy colour. This was saved, and afterwards compared with the remaining liquid in the stomach, which it exactly resembled. On examining the connections between the stomach and the spleen, none of the absorbent vessels were apparent, more than in the former experiment. The pyloric portion of the stomach contained about two ounces of half-digested food, but no liquid. The cardiac portion contained four ounces of liquid, and half an ounce of solid food, so

that the act of vomiting, which appeared, at the time, a sufficient exertion to have completely emptied the stomach, had brought out no part of the contents of the pyloric portion, and had not even completely emptied the cardiac portion. In this experiment, without making allowance for any liquid in the stomach, prior to the decoction of madder being injected, one-fourth part of the quantity thrown in had escaped. The cells of the spleen were more distinctly seen than in the former experiment, particularly at the great end.

Although there was every reason to believe that the colouring matter of the madder had been conveyed into the urinary bladder, yet so muddy and indistinct was the colour, that it was by no means completely ascertained. I therefore resolved, in my future experiments, to make use of some colouring substance, the presence of which could be detected in a very diluted state, by means of a chemical test ; and I requested Mr. W. Brande, of whose assistance I have before availed myself, to point out the substances best fitted for this purpose. He immediately suggested that rhubarb was a substance which he had made use of as a test to ascertain the presence of alkali, and therefore had no doubt that the caustic alkali would prove a test of rhubarb. This substance has also another advantage : it is well known to pass very readily by the kidneys, without being decomposed.

The following are the results of experiments made with rhubarb, to ascertain the best modes of detecting it in the urine and blood, and the time it takes to pass from the stomach to the urinary bladder :

Five drops of tincture of rhubarb, added to three ounces of water, are found to strike an orange tint when the test is

added, which does not take place when the rhubarb is more diluted.

Six drops of tincture of rhubarb, added to three ounces of serum, are readily detected by the eye, but the colour is not heightened by applying the test; the alkali contained in the serum being sufficient to strike as bright a tint, as that quantity of rhubarb can receive from the addition of alkali.

When tincture of rhubarb is mixed with blood just taken from the arm, its colouring matter is afterwards found both in the serum and in the coagulum.

When blood is drawn from the arm of a person, who has taken rhubarb in sufficient quantity to affect the urine, the serum is found to have a slight tinge from it, equal to that which one drop of tincture of rhubarb gives to half an ounce of serum when added to it.

Half an ounce of tincture of rhubarb, diluted in $1\frac{1}{2}$ ounce of water, taken in the interval between meals, did not pass off by urine in less than an hour, and even then was not in sufficient quantity to be discovered till the test was applied.

The same quantity was taken immediately before a breakfast consisting of tea. In 17 minutes, half an ounce of urine was voided, which, when tested, had a light tinge. In 30 minutes another half ounce was made, in which the tinge was stronger; and in 41 minutes a third half ounce was made, in which it was very deep. In an hour and ten minutes, 7 ounces were voided, in which the tinge of the rhubarb was very weak, and in two hours 12 ounces were voided, in which it was hardly perceptible.

In $6\frac{1}{2}$ hours the rhubarb acted on the bowels, and gave a decided tinge to the fæces ; the urine, made at the same time, had a much stronger tinge than what was voided at one hour and ten minutes.

In this experiment, the rhubarb appeared to have escaped from the cardiac portion of the stomach, and in two hours ceased to pass through that channel ; but was afterwards carried into the system from the intestines, and again appeared in the urine.

This experiment was repeated on another person ; the rhubarb was detected in the urine in 20 minutes. In two hours the tinge became very faint ; in five hours it was scarcely perceptible ; in seven hours the rhubarb acted on the bowels ; and the urine, made after that period, became, again, as highly tinged as at first.

It was suggested by a chemical friend, that the prussiate of potash might be a better substance than rhubarb for the present experiments, since the solution of one quarter of a grain in two ounces of water becomes of a blue colour, on the addition of the acidulous muriate of iron.

To determine this point, one quarter of a grain was dissolved in two ounces of serum, but no blue colour was produced by the addition of the test, nor did this effect take place till the quantity of the prussiate was increased to a grain ; so that minute quantities of the prussiate of potash, or at least of the prussic acid, may exist in the blood, without being detected by adding solution of iron.

The effects of rhubarb on the urine and the different parts of the blood having been thus ascertained, a third experiment was made, in which that substance was employed, and I had the assistance of the same gentlemen as in the others.

On November 17, 1807, at 35 minutes past 11 o'clock, five drams of a mixture of tincture of rhubarb and water, in the proportion of a dram to an ounce, were injected into the stomach of a dog, whose pylorus was secured. At 20 minutes past 1, two ounces of fluid were brought up by vomiting: 10 minutes afterwards, another ounce of the mixture was injected, as were nine drams more at half past 4 o'clock. The two last portions were retained, and at 8 o'clock in the evening the dog was killed.

On examining the parts after death, the pylorus was found to be completely secured; the stomach contained about two ounces of fluid; none of the absorbent vessels passing from its great curvature were in a distended state, so as to be rendered visible. The spleen was turgid as in the former experiment, and the urinary bladder full of urine.

This urine, tested by the alkali, received a deeper tinge of rhubarb than the human urine, after rhubarb had been taken three hours by the mouth, and in other respects resembled it.

When the spleen was cut into, the cells were particularly large and distinct. A portion of it was then macerated in two drams of water, for ten minutes, in a glass vial. All the parts were exposed to the water, by its being divided in all directions. The water thus impregnated was strained off and tested by the alkali, and immediately the reddish-brown colour was produced in the centre, and no where else; but in less

than a minute it began to diffuse itself, and extended over the whole.

A similar portion of the liver was treated in the same way, and the alkali was added to the strained liquor, but no change took place in it whatever.

In this experiment the rhubarb was detected in the juices of the spleen as well as in the urine ; and as there was no appearance of it in the liver, it could not have arrived there through the medium of the common absorbents carrying it into the thoracic duct, and afterwards into the circulation of the blood.

The results of the experiments already brought forward having established the fact that fluids received into the stomach, when the pylorus is closed, pass through the spleen into the circulation of the blood ; it became an object to determine, by experiment, whether this takes place when the parts are in a natural state.

The ass appeared, on many accounts, the best subject for this purpose ; and as it is made use of to teach the veterinary pupils the anatomy of that tribe of animals, I applied to the professor for permission to make my experiments in the theatre of the college.

This was granted me in the most obliging manner ; the subjects were also supplied by the college ; and Mr. Sewell, the assistant professor, gave me his personal aid, with a degree of zeal and ability I have rarely met with, and have much pleasure in acknowledging.

In making the following experiments, I had the assistance of Mr. Sewell, Mr. Brodie, Mr. William Brande, and Mr. Clift.

Experiment 1. An ass, which had been kept twenty-four hours without hay, to prevent the liquor that was to be poured into its stomach from being soaked up and retained there, on the evening of the 3d of December, 1807, had a drench given it, consisting of half a pint of the spirituous tincture of rhubarb, diluted in half a pint of water. On the morning of the 4th, this was repeated at eight o'clock, and again at twelve. At two o'clock the animal was pithed, so as to destroy its sensibility, and, before the circulation was entirely stopped, six ounces of blood were taken from the splenic vein into a graduated glass measure, and a similar quantity was taken from the left auricle of the heart, into a vessel of the same kind: these were allowed to coagulate and separate their serum.

The spleen was large and turgid; upon making sections of it, the cells were found to be very numerous; and, towards the great end and near the edge, they were particularly distinct to the naked eye. The cut surface had a strong smell of rhubarb, and when it was applied to white paper, wetted with the alkaline test, an orange tinge was produced. This was strongly contrasted by a stain made in the same manner with a section of the liver, which had no such tinge, nor did the liver give the slightest smell of rhubarb.

Infusions were made of the spleen and liver under similar circumstances; these were strained off into separate glasses, and tested by the alkali. The urine was tested in the same way. The serum, from the different portions of blood, was also poured off into separate glass vessels, to which the test was added. In nineteen hours after the blood had been taken from

the veins, they were all compared together. The urine had so deep a tinge, that it nearly resembled the pure tincture of rhubarb in appearance; the others had a tinge, although in very different degrees; the quantity of rhubarb they contained was estimated by adding tincture of rhubarb to alkaline water, so as to produce corresponding tints. The infusion of spleen had a tint equal to sixty drops of tincture of rhubarb in two ounces of alkaline water; the serum of the splenic vein to fifteen drops; the serum from the left auricle of the heart, to three drops. The infusion of the liver gave no orange tinge; but, had it not been obscured by the red particles of the blood, it must have been equal to that of the serum from the auricle.

The connecting membrane between the stomach and spleen was attentively examined; very few absorbent vessels were seen, and these were not in a turgid state; they were traced to the chain of glands situated near the edge of the spleen, which receive the absorbents of the stomach, but none were detected passing beyond the glands, nor did the glands admit quicksilver to pass through them towards the spleen.

Exp. 2. The former experiment was repeated upon another ass, with similar results, but less strongly marked; the cause of this difference was explained by the abdominal viscera being in an inflamed state.

The urine was less impregnated with rhubarb, the infusion of the spleen had a lighter tinge, and the serum of the splenic vein had it in a still less degree; but evidently exceeding that of the serum from the vena cava inferior, opened just below the diaphragm, which was substituted for the left auricle of the heart, with a view to vary the experiment.

Exp. 3. The same experiment was made on a third ass with similar results.

Exp. 4. An ass that had been kept four days without water, and two without solid food, on the evening of the 8th of January, 1808, had a ball given it, containing half an ounce of powdered rhubarb; on the 9th, at seven o'clock in the morning, this was repeated; a third was given at nine o'clock, and a fourth at twelve. At two o'clock the ass was pithed, and four ounces of blood were taken from the splenic vein, and the same quantity from the left auricle of the heart.

The spleen was found contracted to half the size of those in the former experiments; when cut into, the cells were small, and it required a magnifying glass to see them distinctly. The substance was compact, and bore a near resemblance to a portion of liver; so that in this state the blood-vessels, particularly the veins, must have been much contracted in their diameters.

The stomach contained about two ounces and a half of a gelatinous substance mixed with rhubarb, the small intestines were nearly empty, but the cæcum and colon contained several quarts of water, in which the rhubarb was more evident, both to the sight and smell, than in the stomach.

The absorbent glands upon the edge of the colon were ranged in two rows, one on each side of the great vein, and were exceedingly numerous. In the space between these rows of glands, in some places, twenty trunks of absorbent vessels could be readily counted, of a very large size.

The urine was impregnated with rhubarb, so as to acquire an orange tinge from the addition of the test ; but the infusion of the spleen, and the serum of the different portions of blood, did not contain it in sufficient quantity to have the colour heightened by alkali.

Exp. 5. The last experiment was repeated upon another ass. Two ounces of blood were taken from the splenic vein, two from the large vein of the colon, and two from the inferior vena cava in the lower part of the loins.

The spleen had the same appearance as in the last experiment.

The stomach contained nearly a pint of moderately solid contents, in which the rhubarb was very evident. The small intestines were nearly empty ; but the cæcum and beginning of the colon contained several quarts of liquid, strongly impregnated with rhubarb.

The absorbent glands and vessels had the same appearance as in the former experiment.

The urine, when tested, was found impregnated with rhubarb.

The portions of serum of the blood taken from these different veins, when tested by the alkali, appeared to be very much alike ; at least that from the splenic vein was not more tinged than the others.

Exp. 6. Having been informed by Mr. Sewell, that spirituous liquors, given in large quantities to horses, produce in-

inflammation of the brain, and sometimes death ; and this information having been in some measure confirmed by an ass in a weakly state, that had taken half a pint of the spirituous tincture of rhubarb in the evening, dying in the night, I thought it right to make a comparative experiment with the infusion of rhubarb, to determine whether the result would be the same as with the tincture.

February 9, 1808. An ass had a pint of infusion of rhubarb given to it in the evening ; the same dose was repeated at six o'clock in the morning of the 10th ; and again at nine o'clock, and at twelve. At two o'clock the animal was pithed, and two ounces of blood were taken from the splenic vein, two from the vein of the colon, and two from the inferior vena cava in the lower part of the loins.

The spleen was found turgid and large ; when the cut surface was rubbed on white paper, the orange tint was very evident without any test applied to it, particularly so, when compared with a similar stain made by a section of the liver, in which there was no such tinge.

In the stomach and duodenum, the rhubarb was found in large quantities ; but none was met with in the cæcum.

The urine was impregnated with rhubarb, the orange tint upon the application of the alkali being very distinct.

At the end of twenty hours, the serum of the splenic vein had a tinge equal to four drops of the tincture of rhubarb in two ounces of alkaline water ; that of the vein of the colon and vena cava was less distinct.

The effects of the infusion of the rhubarb on the spleen, the serum of the blood and the urine, corresponded exactly with that of the tincture in the former experiments, but was in a less degree of intensity.

In the course of these experiments, an attempt was made to ascertain whether the blood in the splenic vein has a greater proportion of serum than in the other veins of the body; and the general results were in favour of such an opinion; but it will appear from what follows, that the quantity of serum separated in twenty-four hours is by no means a just criterion of the proportion which the blood contains.

Experiment 1. Three ounces of blood, from the arm of a healthy person, were received into a graduated glass vessel, previously cooled to the temperature of 32° ; three more into a second glass of the temperature of 50° ; and three into a third at 70° . The three glasses were brought into a room, the temperature of which varied from 40° to 50° . At the end of nineteen hours, the serum was found in the following quantities :

In the glass at 32°	9 drams.
50°	11
70°	10

The blood did not flow so freely into the glass at the highest temperature, as into the other two.

Exp. 2. This experiment was repeated, and the serum examined at the end of forty-three hours.

In the glass at 32°	12 drams.
50°	12
70°	13

Exp. 3. It was repeated, and the serum examined at the end of sixty-seven hours.

In the glass at 32°	11 drams.
50°	11½
70°	11½

Exp. 4. It was repeated, and the serum measured at the end of ninety hours.

In the glass at 32°	11½ drams.
50°	13
70°	10½

The blood did not flow so readily into the glass at the highest temperature as into the other two.

From the experiments, it appears that the serum separates in larger quantity, when the blood is received into a vessel at the temperature of 70°, than at 50° or 32°; this, however, is prevented from taking place by the blood not flowing readily from the vein.

From these experiments on the spleen, contained in this and the foregoing part, the following facts appear to have been ascertained :

That the spleen is met with in two very different states ; one which may be termed the distended, the other the contracted,

and that in the one its size is double what it is in the other. In the distended state there is a distinct appearance of cells containing a liquid fluid, distinguishable by the naked eye; in the contracted, these only become distinct when seen through a magnifying glass. The distended state takes place when the stomach has received unusual quantities of liquids before the animal's death; and the contracted state, when the animal has been kept several days without any drink before the spleen is examined.

That the trunk of the splenic vein (of the hog) is more than five times the size of the trunk of the splenic artery.

That when the pylorus is secured, coloured liquids pass from the cardiac portion of the stomach into the circulation of the blood, and go off by the urine; and while this is going on, the spleen is in its most distended state, and the colouring matter is found in its juices, although it is not to be detected in those of the liver. The colouring matter cannot, therefore, be conveyed to the spleen through the common absorbents of the stomach, which lead to the thoracic duct.

That when the pylorus is open, the colouring matter, under the circumstances above mentioned, is equally detected in the spleen.

That when the spleen is in this state, the blood in the splenic vein has its serum more strongly impregnated with the colouring matter, than that of the blood in the other veins of the body; and when the stomach is kept without liquids, although colouring matter is carried into the system from the intestinal canal by the ordinary channels, no particular evidence of it is met with in the spleen or its veins.

That the cæcum and the portion of the colon immediately beyond it, is found (in the ass) to be at all times filled with liquids, even when none has been received into the stomach for several days, and there is a greater number of absorbent vessels for carrying liquids from the colon into the thoracic duct, than from any other part of the body. The colon is, therefore, a reservoir, from which the blood-vessels are occasionally supplied with liquids.

Mr. Sewell informs me, that the same observation applies in a still greater degree to the horse.

That coloured liquids taken into the human stomach, under some circumstances, begin to pass off by urine in seventeen minutes, continue to do so for some hours, and then disappear; they are again met with in the urine, after the colouring matter is known to have arrived at the great intestines, by its passing off by the bowels.

From the above facts, the following conclusions may be drawn :

That the liquids received into the stomach beyond what are employed for digestion, are not wholly carried out of it by the common absorbents of the stomach, or the canal of the intestines, but are partly conveyed through the medium of the spleen into the circulation of the liver.

The vessels which communicate between the stomach and the spleen have not been discovered; but if it is proved that the colouring matter of the contents of the stomach is met with in greater quantity in the spleen, and in the vein which goes from that organ to the liver, than in the other veins of the body,

there appears to be no other mode in which it can arrive there, but by means of such vessels; and the two different states of the spleen, which correspond with the quantities of liquids that pass from the stomach, are strongly in favour of the existence of such a channel.

This communication between the cardiac portion of the stomach and the spleen, will explain the circumstance of those who are in the habit of drinking spirituous liquors having the spleen and liver so frequently diseased, and the diseases of both organs being of the same kind.

This organ is not essential to life, its office being of a secondary kind; but when it is materially diseased, or entirely removed, digestion must be disturbed. The extent to which this takes place, cannot be accurately known from experiments on quadrupeds, and the instances in which the human spleen has been removed, have not been attended to with sufficient accuracy to afford an explanation of the effects that were produced on the stomach.

Observations on Electrical Shocks.

Mr. James Phœnix, of Liverpool, has found that there is a great difference between electrical shocks from a Leyden phial filled from the conductor in the common way, and those filled as follows: he stood on an insulated stool, laid one finger on the prime conductor, and filled the jar from the other; when, on receiving the shocks, he found them so considerably augmented, that two taken in this manner incommoded him more than a dozen in the common method.

Med. & Phys. Journ. No. 115.

Warnock, on Adhesive Straps in Ulcers.

GENTLEMEN,

I should wish, through the medium of your valuable publication, to call the attention of the medical world to a practice that is adopted throughout the generality of men of war, fraught in my opinion with the most pernicious consequences. It is not my intention to enter into any controversy on the subject; all my aim is, to call out the observations of some more clever man than I am. The practice I allude to, is the unlimited use of adhesive straps in ulcers. To Mr. Baynton, the so successful practitioner in the treatment of ulcers, after this plan, I give every credit; but I am positive at the time he recommended it so warmly to the notice of surgeons, it was far from his intentions, that it should be so universally adopted as it is at present. By far the majority of ulcers you meet with on-board of a man of war, partakes of a scorbutic taint, or are generally attached to scorbutic patients; now I am certain, from my experience in the treatment of those sores, that nothing is so bad as to apply straps of adhesive plaster. When the discharge is copious and of bad matter, I am certain, by compressing the part the ulcer is on, you produce an extraordinary degree of inflammation; you compel the matter which nature designed should find an exit there, to open an abscess in a more depending part; and, by that means, you often have both the old, and this ulcer of your own make, communicate with each other, and, by the extensiveness of it, you bring on a discharge highly debilitating to the system of a sailor, who has nothing to support this but a little meal and water for his breakfast, and salt beef: the matter is often absorbed to a more vital post, hectic fever ensues, and your patient is carried off. It will be of no avail to argue from the good effects that have resulted by the treatment of ulcer, after Mr. Baynton's manner; on those

where your patient's diet is liberal, the solids have not that tendency to run into a state of mortification you will always meet with at sea ; at the same time, I am not an avowed enemy to the practice ; on the contrary, no other will be crowned with so much success, when it is adopted at the proper time. I am certain, if the practice was not so generally adopted, we should not have the painful sight of seeing men " who have rendered the state some service," wandering about the streets of London without a leg, imploring your assistance, to bestow a trifle on them to enable them to drag out a miserable existence.

I am, &c.

W. WARNOCK.

Med. & Phys. Journ. No. 114.

Of the Nature of the Acid formed in Indigestion.

M. Perperes, apothecary at Azilles, has published some curious experiments, for the purpose of ascertaining the nature of the acid formed in indigestion. From these he deduces the following results: 1. That the distention of the stomach, in cases of indigestion, is occasioned by the formation of carbonic acid, arising from a commencement of decomposition, which the nutritive substances taken as food, chiefly when they are of the mucilaginous vegetable kind, have undergone. 2. That the burning pain which the digestive organ experiences, and which sometimes extends to the œsophagus, is owing to a quantity of acetous acid, formed by the complete disoxygenation of the aliment. 3. That eight ounces of roasted chesnuts produced two ounces and six drachms of acetous acid, after having fermented in the stomach an hour and a half. 4. That the method (which has at least constantly succeeded with him) for remedying this disagreeable sensation, which frequently occurs

to persons who have weak stomachs, is to take after a meal ten grains of powdered colombo-root, with twelve grains of calcined magnesia, mixed together for a single dose.

Med. & Phys. Jour. No. 114.

Lamb's Apparatus for Distilling Sea Water.

A letter transmitted to the navy board, by captain Hodgson, of his majesty's ship *Trusty*, states, that the apparatus of Mr. Lamb, patentee of an invention for distilling fresh water from sea water, used in the above vessel, performed very well, and consumed less fuel than one before in use for the same purpose; that the operation of distillation does not in the least interfere with the cooking of the ship's company's meat; that when three boilers are in use, from twenty to twenty-five gallons of fresh water per hour are produced; and that though the water at first is not perfectly agreeable to the taste, though clear, yet, when exposed to the air for a short time, it becomes very good. The apparatus for the *Trusty* was of the size calculated for a fifty gun ship.

Med. & Phys. Jour. No. 114.

Earths, ascertained to be Metallic Oxides.

Professor Davy has read a paper before the Royal Society, containing an account of his various new and important electrical experiments on the decomposition of the earths (already detailed in this Journal), by which this distinguished philosopher has shown, that they are all metallic oxides, and has thus

verified by experiment what had been long suspected from analogy. These important discoveries complete the history of alkaline and earthy bodies, and form an era in chemical philosophy. They likewise must lead to great improvements in mineralogy and geology, the last of which sciences has hitherto wanted elements. In the same communication in which these facts are announced, a most important experiment of two Swedish chemists, Messrs. Benzelius and Pontin, is mentioned. These gentlemen have combined the basis of volatile alkali with quicksilver, and in this way have formed an amalgam. Here is something metallic, apparently composed of two gases, a circumstance in which the dreams of the alchemists seem to be realized.

Med. & Phys. Jour. No. 116.

Contrivance to discharge Superfluous Water.

The Rev. Mr. Leg, of Asprington, Devon, has invented a contrivance for discharging the superfluous water from ponds, tanks, and reservoirs, in times of floods. It consists of a beam of wood, suspended by an iron pin over the head of the water, so as to form a kind of lever or balance, having one end affixed to a chain, which raises a plug to let out the superfluous water, and having suspended at the other a box or bucket, made rather leaky, into which the water is conveyed by a pipe, whenever it rises to a certain level. As long as the bucket continues filled with water, the weight will raise the plug, and when the water no longer keeps the bucket full, the plug will return to its place, by the lever recovering its level position.

Med. & Phys. Jour. No. 116.

REVIEW.

The Planter's and Mariner's Medical Companion, treating, according to the most successful practice, I. The diseases common to warm climates, and on ship board; II. The common cases in surgery, as fractures, dislocations, &c. &c. III. The complaints peculiar to women and children. To which are subjoined a dispensatory, showing how to prepare and administer family medicines, and a glossary giving an explanation of technical terms. pp. 322. By James Ewell, physician in Savannah. Philadelphia, Bioren, 1807, price.

FROM the detail of the title page of this work, the reader may form a tolerable idea of the nature of its contents. An attempt to add another medical book to the many works of the same nature, which we already have*, and which are the results of long and extensive practice, would seem to be altogether unnecessary. The venerable Buchan's work has stood

* Family medical books :

1. Tissot's Advice to the People.
2. Buchan's Family Physician.
3. Thompson's do.
4. Reece's Medical Guide.
5. Parkinson's Medical Admonitions.
6. Town and Country Friend and Physician.
7. Dancer's Medical Assistant.

Works for the use of shipping are nearly as numerous.

the test of between twenty and thirty editions in England, and several in the United States; and two respectable physicians, Drs. Griffiths and Cathrall, in this city, have published editions of it a few years since, with numerous additions and notes, expressly with the view to accommodate the work to the diseases, and improved modes of treatment pursued in this country, or rather this city. From either, or both of those editions, every family might obtain (and at half the expence of the present work) all the information requisite to prevent or to cure the diseases to which we are most commonly subject; we assert, therefore, that the addition of another new work, upon the same subject, could only be justified by a conviction of new and important discoveries having been made by the author, but which, we believe, cannot be urged.

Dr. Ewell has prefixed to his work the recommendations of several physicians of this city. This plan, we conceive, is only admissible in the case of a bookseller republishing a work written in another country; but it is disgraceful for a professional man, "*of long and successful practice*," to have recourse to such a plan of forestalling opinion. We all know how these recommendations are obtained. Personal friendship, or benevolence of disposition, will induce many to give a warm approbation to works of very moderate merit; fear of offence, a desire to get rid of an importuning applicant, or indifference about the mere attaching a name to what is subscribed by others (an act which costs neither money, trouble, nor time), will secure those of others; finally, the vanity of being brought before the public, and of being deemed of sufficient rank in society to influence its opinion, will, at any time, procure numerous signatures. It would have been much more dignified, to permit the world to form an opinion of the work, than thus

to attempt an anticipation of it, by the common-place method of recommendations.

Prefixed to the work are some "preliminary observations on the respect paid to medicine by the Greeks; upon the prevalence of quacks, and the causes of their success; on the propriety of changing medicines, when they begin to fail, to some of the same class; on morning drams; on bathing; on the advantage of cleanliness to slaves, and the establishment of houses for hospitals on estates where there are negroes; on regimen and diet." On these last important points he very properly advises simplicity, and a "preference to such articles as our personal knowledge has demonstrated to be most congenial to our constitutions and habits."

The body of the work commences with remarks on *fevers in general*, in which we find nothing new, nor particularly interesting. The treatment of the fever and ague is to be conducted upon the usual plan; but he omits to notice the importance of blisters in protracted intermittents; a remedy which we mention for the benefit of those southern citizens who may be afflicted with the disease in question. Mercury is recommended when visceral obstructions are suspected, but no notice is taken of the same remedy in the nervous fever, although it is all-important, and should never be omitted in cases where the common stimulants do not produce the desired check of the disease. In the same disease, "*strong scented* herbs" are advised "to be strewed every day about the room," upon the supposition, we suppose, that they tend to correct the air; but they will do no good. They may indeed counteract bad smells, but the impurity of the air will still remain*. Proper ventilation, and personal cleanliness, are infinitely better than all the smells which can be introduced. To prevent the progress of conta-

gion, he advises the *nitrous fumigation* of Dr. Carmichael Smith, so justly reprobated by Dr. Trotter, the British navy physician, and now laid aside, as useless, by all the navy surgeons. Persons who have caught infection are advised to take an emetic, and, on going to bed, "a little mulled cyder or wine whey, with anodyne sudorific drops."

In the further detail of the symptoms and treatment of the various diseases which are noticed by Dr. Ewell, we see nothing different from what is to be met with in most works of a similar nature: the remarks in general are good, so far as they go, but there are also omissions which ought not to be observed in a work expressly intended to be the *vade mecum*, or medical *fac totum* of the secluded planter. The assertion, too, that the "vaccine disease is a certain security against the small-pox," is contrary to fact, even as respects the time when Dr. E. wrote; and since that, numerous instances have occurred of attacks of small-pox after the vaccine, especially in England, and we find that the subject has been brought before the British house of commons by Mr. Rosc. Still, however, it may be said to be preferable to the small-pox, because it very generally does prevent variolous infection, and every practitioner knows that the small-pox, with all its horrors, has often attacked persons who had been previously inoculated for it.

In the *locked jaw* large doses of opium are recommended, notwithstanding every one who has made trial of it knows that it produces little or no effect in the disease. Such indeed is the insensibility of the system to this medicine, that quantities almost incredible have been given without effect. We are

* Nay, it is now known, that the branches of plants discharge air, which is noxious to animal life.

convinced that it ought not to be depended upon as a chief remedy in this complaint. The tincture of cantharides is also recommended in the same disease, but this remedy has never succeeded in the hands of any person, except those of its original employer, viz. Dr. Brown, of Kentucky.

For that alarming disease, gout in the stomach, French brandy is considered as a specific ; but Dr. Ewell must be informed that in some cases a very opposite remedy is necessary, viz. bleeding. This we know is in direct contradiction to the principles and practice of the *old school*; but Philadelphia affords more than one living witness of the efficacy of the remedy. Among the means of prevention, the use of ginger and milk for breakfast, as recommended from experience, by ~~Mr~~ Joseph Banks, is unnoticed.

In the case of the bite of a mad dog, the usual direction to keep the wound open is properly given ; it is also directed to be "washed." But a mere washing will seldom produce much good effect, owing to the nature of the wound. A much better way is to pour water on the part for an hour, from the mouth of a tea kettle, as long since advised by Haygarth. Mercury is also recommended, both externally and internally, as a preventive ; the object is to excite salivation : but it is clear that the very uncertain periods at which the disease comes on, when it does attack, must render the remedy useless. Besides, numerous instances have occurred of a salivation having been used without effect, and it is therefore surprising that it should be again recommended. When the disease comes on, large bleedings, with purgative medicines, are advised ; but before urging the adoption of debilitating remedies in a disease of great debility, Dr. E. should have satisfied his readers of their success. We all know that co-


pious blood-letting has been prescribed for the complaint from the earliest records of medicine, but no satisfactory case as yet has been adduced of its success. Of late, indeed, cases have been related of its utility ; but the accuracy of the facts have been called in question by no less than two medical men in different countries* ; and until the point be settled, we should think that the recommendation of the remedy, in a work intended to be popular, extremely improper. Opium, too, in large doses is mentioned as “ having produced beneficial effects ;” but experience has shown that it is even more useless than in tetanus. It is to be regretted that we have yet to look for a certain remedy in this awful disease ; and that man who should discover one, would deserve to be held in grateful remembrance by the whole human race.


In the no less fatal disease, the croup or hives, an entire dependence is placed upon a remedy which repeated experience has shown to be far from deserving the reputation it has acquired. We allude to the *Seneka snake root*. The utility of an infusion of this plant, in the close of pneumonic and catarrhal affections, and in old asthmas, has long been known, and has within a few years been brought into use in the croup, by Dr. Archer, of Maryland. But it should never be trusted to alone, while antimonial emetics, or ipecacuanha and calomel, are within reach. Dr. Ewell has advised these medicines, with blisters to the throat and nape of the neck. Surely a “ sovereign remedy” required not the assistance of others. As an auxiliary to keep up an irritation and consequent discharge of mucus from the fauces and throat, the seneka is highly useful ; but we venture to pronounce, after sufficient trials, that he who wholly depends upon it, will lean upon a broken reed.


* See Medical Museum, vol. iii.

Directions are also given to relieve the common accidents, which may require the aid of a surgeon. These are in themselves proper and correct. But it can scarcely be supposed that any person, not acquainted with the practice of surgery, will be able to profit by them; and some of the accidents require the exertion of the greatest skill, such as the dislocation of the thigh, of the elbow, and of the jaw.

Notice to Correspondents.

 I have received a communication from a practitioner in New Jersey, signed W. G. R. which I shall publish with pleasure when the author favours me with his name; as it is an invariable rule, to admit no anonymous pieces, unless informed myself of the source from whence derived.

 I have repeatedly requested that gentlemen who favour me with their communications, would be pleased to give a heading to them, as it is more likely they will convey clearly their ideas of the nature of the disease they describe, than any other person.

 Dr. Thomas B. W. Gray's communication of September 12, 1807, was long since received, and acknowledged by a letter addressed to him. It was hoped that a further communication, from him or Dr. W. would have resulted from it; but, as the editor has not since received an answer, he fears his letter may not have reached Dr. G. and begs him, *thus*, to attend particularly to this notice.

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